

SR-68, Bangerter Highway through Saratoga Springs

Salt Lake and Utah Counties, Utah

Environmental Assessment and 4(f) Evaluation

Submitted Pursuant to:
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Federal Highway Administration
and
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CHAPTER 3 - AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION

The purpose of this chapter is to describe the existing or affected environment, the impacts or consequences to the natural and manmade environment resulting from the No Build Alternative and the Proposed Action, and the necessary mitigation to offset the impacts from the Proposed Action.

The existing conditions have been defined based on literature reviews, coordination with local, state, and federal agencies, and on-site field investigations and surveys. Separate detailed technical studies were conducted and incorporated into this section by reference:

- Traffic Analysis;
- Noise Technical Report;
- Preliminary Drainage Report;
- Cultural Resources Inventory;
- Wetland and Waters of the U.S. Report;
- Technical memorandum for Floodplain and Soils;
- Technical memorandum for Water Quality;
- Technical memorandum for Wildlife Resources; and
- Hazardous Materials Survey and Inventory.

The descriptions focus on the human and natural environments within the SR-68 project corridor. The affected environment provides a basis for evaluating the potential environmental impacts associated with the alternatives. Mitigation measures to compensate for the impacts to the environmental features are discussed in this chapter as well. As discussed, the project begins at MP 30.5 in Saratoga Springs (Utah County) and extends 10.3 miles to MP 40.8 at the Bangerter Highway/SR-68 intersection in Bluffdale (Salt Lake County).

3.1 LAND USE

3.1.1 Regulatory Setting

Local land use planning is guided by land use general plans and zoning. Within cities, the Municipal Land Use Development and Management Act empowers zoning and the regulation of land uses. The County Land Use Development and Management Act does the same for county jurisdictions. Land use and zoning codes provide the formal regulatory means for implementing zoning regulations. Within the project corridor, Utah County and the cities of Saratoga Springs, Lehi, and Bluffdale have approved general plans. These plans provide land use and zoning designations and provide direction for future development within their cities and along the project roadway.



3.1.2 Affected Environment

Existing land uses adjacent to SR-68 in the project corridor are a mix of residential, agricultural, commercial, undeveloped, and institutional (military – Camp Williams) as illustrated in Figure 3-1, Existing Land Uses. In recent years, development along the corridor has reflected the trend toward more urbanized uses.

The southern portion of the project corridor is primarily within Saratoga Springs City. Land use adjacent to SR-68 in Saratoga Springs is transitioning from agricultural uses to more urbanized commercial and residential uses. The central portion of the project corridor is also within Saratoga Springs as well as in an unincorporated section of Utah County. Commercial uses are developing around the intersection of SR-68 with SR-73. North and south of this intersection, several new residential development projects have been approved and are being constructed, including the Landrock Commons townhomes, the Dalmore Meadows subdivision, the Aspen Hills subdivision, and the Hillcrest Condominiums. Proposed development projects in the area are shown in Figure 3-2, Approved and Proposed Developments.

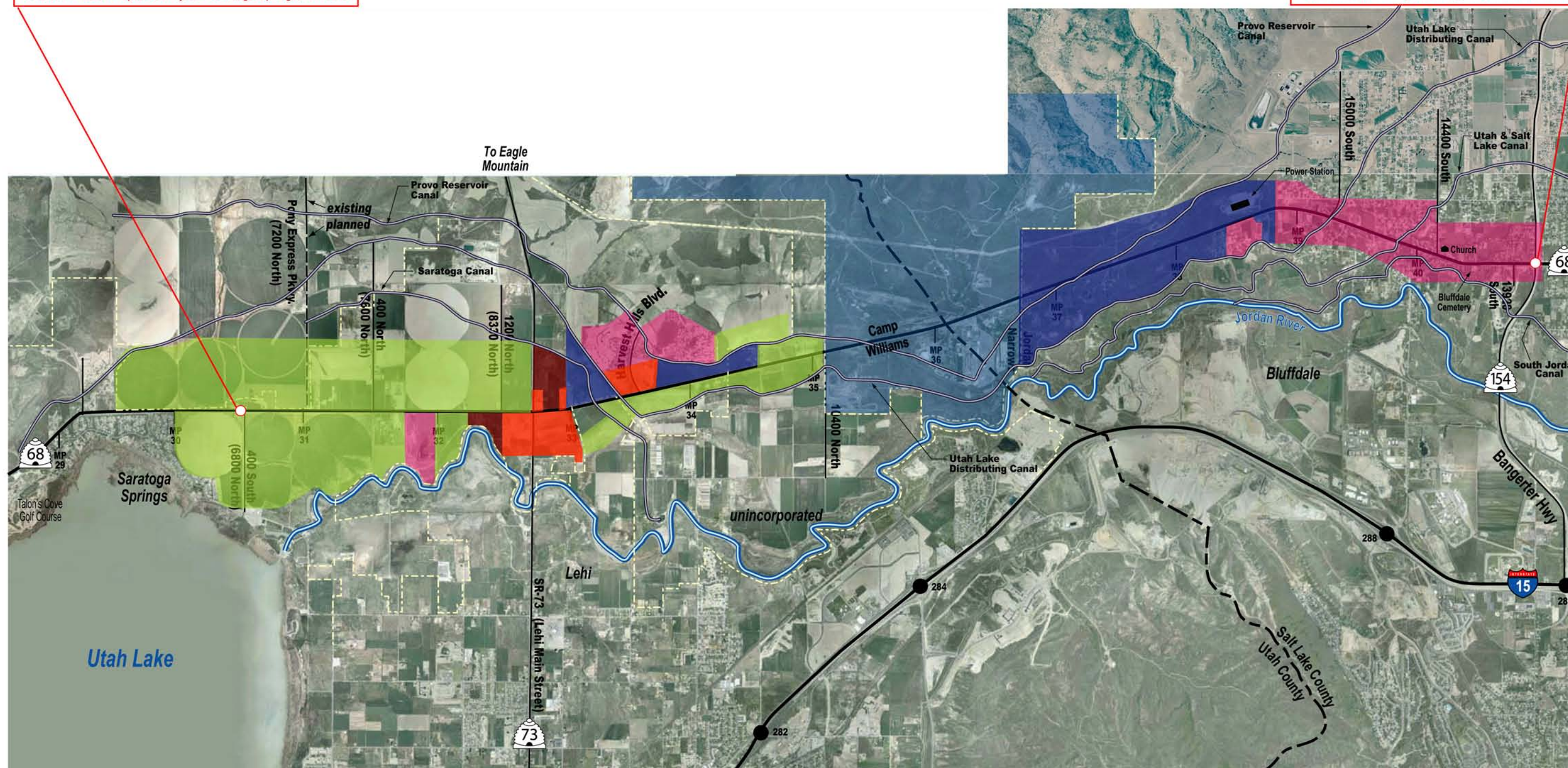
A small portion of the City of Lehi abuts the east side of SR-68 just north of SR-73. This land is zoned for commercial use. The roadway then passes through a small area of unincorporated Utah County, for about $\frac{3}{4}$ of a mile before crossing a Utah National Guard facility known as Camp Williams. North of Camp Williams the roadway enters the City of Bluffdale. Land uses adjacent to the roadway in Bluffdale are primarily residential and undeveloped except for land at the northern terminus of the SR-68 project corridor where a mix of residential and commercial uses lie just south of Bangerter Highway.

The land use plans are consistent among the municipalities; they identify new commercial, residential, and mixed commercial/residential uses along SR-68 in the future. Figure 3-3, Planned Land Use, shows planned designations for each jurisdiction in the project area. In Saratoga Springs, a mix of commercial and residential uses is planned along SR-68. In Bluffdale, the primary land uses in the project area are expected to continue to be residential, except for planned commercial development immediately south of Bangerter Highway.

In most instances, future land uses presented in the general plans are consistent with existing zoning designations. An exception is the land within Lehi City adjacent to SR-68 just north of SR-73. This property is currently zoned for agricultural use, but the city's general plan map identifies the future use as commercial. Also, a small area in Bluffdale on the east side of SR-68, north of 16200 South, is currently zoned agricultural and identified for future use as neighborhood commercial on the general plan map.

Southern End of Proposed Project: Saratoga Springs, MP 30.5

Northern End of Proposed Project: Bluffdale, MP 40.8

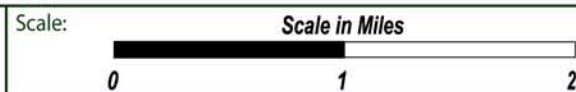
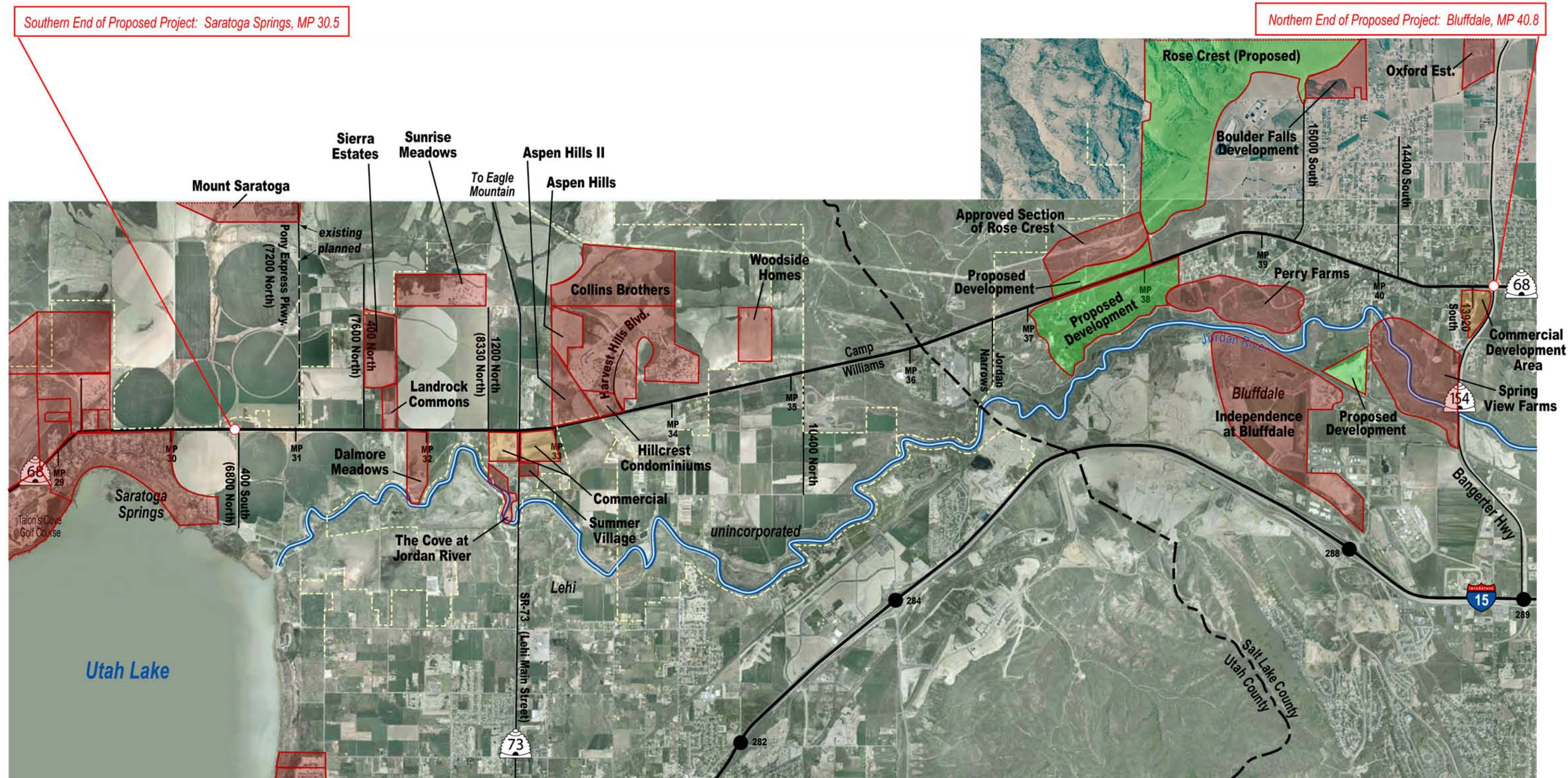


--- Planned Roadways
--- Municipal Boundaries

Legend:

Agricultural	Commercial	Undeveloped
Residential	Commercial (Under Development)	Camp Williams

Figure 3-1
Existing Land Uses



Planned Roadways
Municipal Boundaries

Legend:

- Approved Developments
- Proposed Developments
- Commercial Development

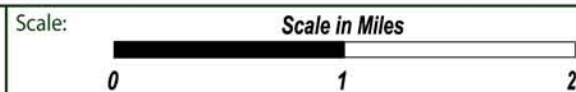
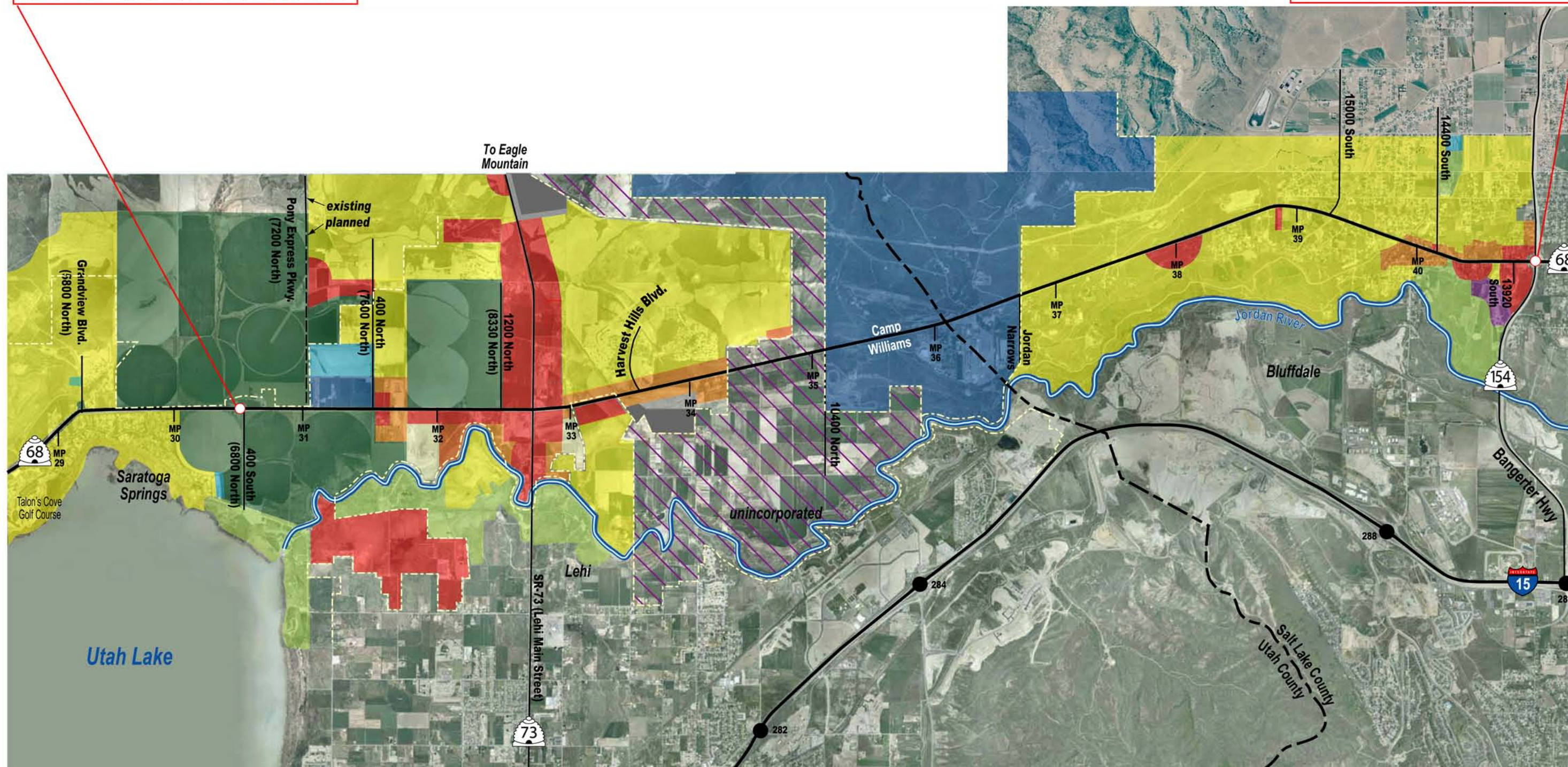
Information compiled September 2006.

Figure 3-2
Approved and Proposed Developments



Southern End of Proposed Project: Saratoga Springs, MP 30.5

Northern End of Proposed Project: Bluffdale, MP 40.8



Planned Roadways
Municipal Boundaries

Legend:

Business Park, Regional Commercial, Commercial, Mixed Use, Civic, Neighborhood Commercial
Urban Center

Institutional, Camp Williams
Multi-Family Residential

Medium Density Residential
Very Low Density Agr/Res., Low Density Residential

Agricultural
Natural Open Space, Environmentally Sensitive Areas, Parks and Recreation

Unincorporated Utah County

Figure 3-3
Planned Land Use



3.1.3 Environmental Consequences

3.1.3.1 No Build Alternative

The No Build Alternative will have no impact to existing land uses, planning, or zoning along SR-68 within the project corridor.

3.1.3.2 Proposed Action

The Proposed Action is consistent with approved local plans and will not adversely impact existing land use, planned development, or zoning adjacent to the SR-68 project corridor. Also, this alternative will not change the existing or future land use approval process in any of the cities.

3.1.4 Mitigation

Since the Proposed Action will not impact land use, no mitigation is required.

3.2 FARMLAND

3.2.1 Regulatory Setting

3.2.1.1 Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA) of 1981 is intended to: “minimize the extent to which federal activities contribute to the conversion of farmland to nonagricultural use.” The federal agency responsible for overseeing compliance with the FPPA is the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). This Act requires federal agencies to identify farmland that is considered prime, unique, or of statewide importance within their respective project study areas. The NRCS does not make determinations on farmlands already committed to development within city limits. Therefore, the only area that may contain protected farmlands is in the unincorporated section of Utah County.

3.2.1.2 Agricultural Protection Areas

The State of Utah allows for the formation of Agricultural Protection Areas (APAs) as included in Utah Code Title 17 Chapter 41. This law protects certain agricultural areas in unincorporated areas. In 1998, a bill (HB 74) was passed that allowed for the establishment of APAs within city boundaries. APAs are defined as geographic areas where agricultural activities are given special protection. A landowner can petition the county to have their land designated as an APA. APA areas are reviewed every 20 years to determine if the APA should be maintained, modified, or terminated. Once land is designated an APA it remains protected and landowners must petition the Agriculture Protection Area Advisory Board to remove the land from the APA.

3.2.2 Affected Environment

Farmlands along SR-68 are illustrated in Figure 3-4, Farmland Resources in the Project Corridor. Current agricultural production along the SR-68 corridor primarily includes crops of alfalfa, wheat, and corn. Active agricultural lands within the project area are irrigated through a network of canals, ditches, and laterals. The primary canals supplying irrigation water to farmlands include elements of the Gardner Canal, the Saratoga Canal, the Utah



Lake Distributing Canal, the Provo Reservoir Canal/Murdock Ditch (Welby Canal), the Utah and Salt Lake Canal, and the South Jordan Canal. Irrigation water is diverted out of the Jordan River or pumped out of Utah Lake and into these canals for delivery. Secondary and tertiary irrigation ditches divert water from the canals to agricultural fields throughout the area.

3.2.2.1 Prime and Unique Farmlands

The only area considered prime farmland, as defined by the FPPA and agreed to by the NRCS, lies between the northern Saratoga Springs boundary and the southern boundary of Camp Williams in an unincorporated area of Utah County. This area is classified as prime farmland based on its soil types, the slope of the land, and availability of irrigation water. There are no farmlands classified as unique or of statewide importance within the project study area.

3.2.2.2 Agricultural Protection Areas

APAs are located in the southern portion of the project area within Saratoga Springs. Large parcels owned by the Church of Jesus Christ of Latter-Day Saints (LDS Church) comprise the APAs illustrated in Figure 3-4.

3.2.3 Environmental Consequences

3.2.3.1 No Build Alternative

The No Build Alternative will have no impact to farmland resources along SR-68 within the project corridor.

3.2.3.2 Proposed Action

The Proposed Action will require the conversion of approximately 20.5 acres of farmland for transportation use along the project corridor, including 6.2 acres of prime farmland in Utah County and 14.3 acres of agricultural protected areas in Saratoga Springs.

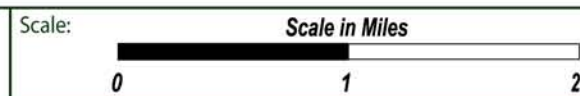
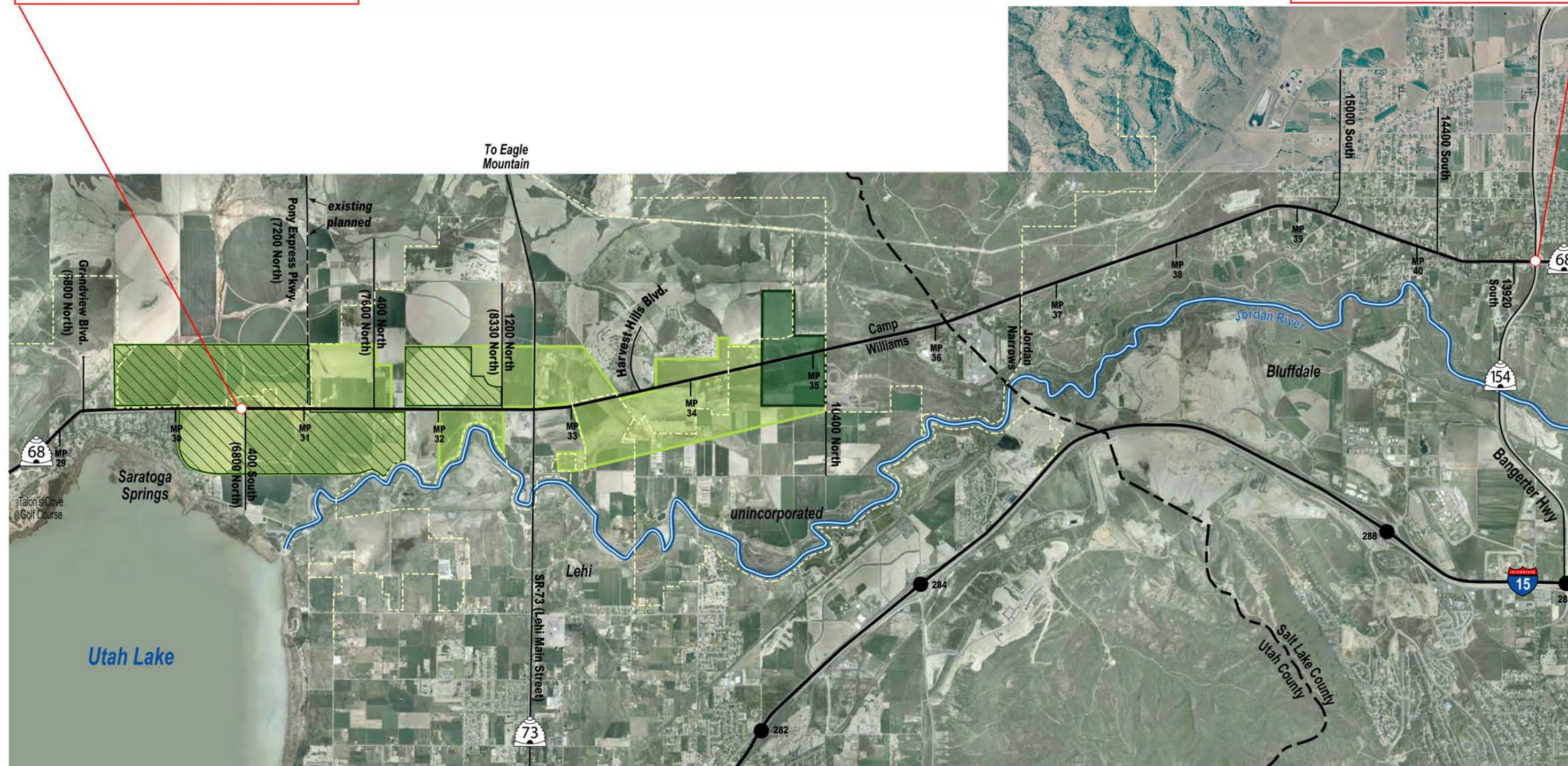
If farmland that has been determined prime, unique, or of statewide importance is impacted, a Farmland Conversion Impact Rating Form must be completed by the federal agency and the NRCS (see Appendix B for completed form CPA-106). The project team coordinated with the local NRCS field office to identify potentially affected farmlands in the project area and evaluate impacts.

The NRCS evaluated the impact the Proposed Action will have on prime farmland using the Farmland Conversion Impact Rating Form. This form includes the total acres of prime farmland to be converted directly and indirectly, a land evaluation and criteria, and 12 site assessment criteria. The NRCS is required to consider alternatives that avoid impacts and measures to minimize harm to prime farmlands if the land evaluation criteria and the site assessment criteria total 160 or more points. The conversion impact rating for the Proposed Action totaled 156 points, below the 160-point threshold for avoidance alternatives analysis.



Southern End of Proposed Project: Saratoga Springs, MP 30.5

Northern End of Proposed Project: Bluffdale, MP 40.8



--- Planned Roadways
--- Municipal Boundaries

Legend:

- Agricultural Lands
- Agricultural Protected Lands
- Prime and Unique Farmlands

Figure 3-4
Farmland Resources



3.2.4 Mitigation

The land in agricultural production along SR-68 will be able to continue in its current uses because the Proposed Action does not bisect any farms, does not eliminate access for agriculture areas, or affect their ability to remain agriculturally productive properties; therefore, no mitigation is required.

UDOT will maintain access to existing farmland and agricultural areas as part of the roadway design. Potential effects on the irrigation systems, including ditches, canals, and ponds, will be avoided or reconstructed as part of the Proposed Action. These facilities will be relocated and reconstructed to maintain continuity and use of the water delivery systems.

3.3 SOCIAL RESOURCES

This section discusses the social aspects along the project corridor. Regional growth patterns and demographics are outlined along with the regulatory settings. The affected environment and impacts are separated into Recreation Resources, Public Facilities, Utilities and Canals, Environmental Justice, Right-of-Way and Relocations.

3.3.1 Regional Growth

Population growth in northern Utah County and southern Salt Lake County has contributed to the need for improvements to SR-68. In Utah County, the cities of Lehi, Saratoga Springs, and Eagle Mountain are growing rapidly. Although Eagle Mountain is not adjacent to the project corridor, its residents use SR-68 as a major transportation route. In Salt Lake County, the City of Bluffdale lies along the corridor and is also experiencing rapid growth.

Population forecasts prepared by the Utah Governor's Office of Planning and Budget (GOPB) for the Utah and Salt Lake County area indicate that growth rates are expected to continue to increase over the coming decades. The projected 2030 populations in Saratoga Springs, Eagle Mountain, and Lehi, as well as Utah and Salt Lake Counties, are shown in Table 3-1.

TABLE 3-1, POPULATION FORECAST, 2005-2030

Location	2005	2030	Pop. Increase	% Change
Utah County	453,977	804,112	350,135	77%
Saratoga Springs	7,826	35,321	27,495	351%
Eagle Mountain City	10,863	53,870	43,007	396%
Lehi City	30,088	77,064	46,976	156%
Salt Lake County	970,748	1,381,519	410,771	42%
Bluffdale City	6,120	41,940	35,820	585%

Source: US Census 2000, Utah Governor's Office of Planning and Budget:
<http://governor.utah.gov/dea/LongTermProjections.html>

3.3.2 Demographics

Demographic characteristics such as race, ethnicity, household characteristics, and income were reviewed for Utah and Salt Lake Counties from the U.S. Census Bureau, 2000 data.

Demographic data indicates that the project area census tracts do not have high minority populations. Block group boundaries do not correspond directly with adjacent properties as



they take in a larger area, but provide the closest area for which data are available. In Utah County, 94 percent of the total population is white. Of the remaining demographic groups, 4.2 percent are Hispanic or Latino, 1.0 percent are Native Hawaiian or other Pacific Island group, 0.8 percent are black, and 0.7 percent are Asian. Census data for Salt Lake County shows similar results, 96 percent of the population is identified as white; Hispanic or Latino comprise 3.8% of the population. The other demographic groups make-up the remaining 0.2%. Approximately 1.4 percent of the total population is disabled for the combined adjacent census tracts in Salt Lake and Utah Counties.

Census data regarding income-related information showed that in 1999 Utah County and Salt Lake County residents had a median income of \$45,833 and \$48,373, respectively (U.S. Census Bureau, 2000). A total of two percent of the households in Utah County receive public assistance income; approximately three percent of the households in Salt Lake County receive public assistance income. Approximately 6.8 percent of the Utah County population is considered below the poverty level; 5.7 percent of Salt Lake County is considered below the poverty level.

3.3.3 Regulatory Setting

3.3.3.1 Federal and State Regulations on Uniform Relocation Act

Relocation activities are regulated by federal and state laws. These laws include Title I and II of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646) and amendments thereto, together with the State of Utah Relocation Program (under the Utah Relocation Assistance Act, Utah Code 57-12-13). The statutes authorize agencies to provide relocation assistance, to make relocation payments to displaced persons, and to take other actions to comply with the provisions of the laws.

The Utah Department of Transportation (UDOT) Right-of-Way Division administers the Act for state and federal road projects. The Relocation Section is responsible for providing assistance and benefits to persons, businesses, farm operations, and non-profit organizations displaced by the acquisition of right-of-way for highway projects. The objective is to ensure right-of-way acquisition occurs in a manner that does not cause a disproportionate hardship to those affected by projects designed for the benefit of the general public.

3.3.3.2 Section 4(f) (as related to recreational resources)

The regulation that protects recreational resources located in or adjacent to the Proposed Action and the potential project-related impacts is Section 4(f) of the U.S. Department of Transportation, 1966 as amended (see Chapter 4).

3.3.3.3 Executive Order for Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations was signed by President Clinton on February 11, 1994. This Executive Order directs federal agencies to take appropriate and necessary steps to identify and address disproportionately high and adverse effects of their projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law.



3.3.3.4 Adjustment and Relocation of Utilities

Regulations set forth in 23 CFR 645 prescribe the policies, procedures, and reimbursement provisions for the adjustment and relocation of utilities. A discussion of the utilities along the project corridor and how the Proposed Action affects them is provided below.

3.3.4 Affected Environment

This section discusses Recreation Resources, Public Facilities, Utilities and Canals, Environmental Justice, Right-of-Way and Relocations.

3.3.4.1 Recreation Resources

Existing and Planned Parks and Recreation Areas

The only existing recreation area is the 30-acre Veterans Memorial Park located at 17111 South Redwood Road within Camp Williams. The park is maintained by the Utah Department of Parks and Recreation and includes a cemetery, chapel, wall of honor, a museum featuring military memorabilia, and an administrative building. Section 4(f) protection applies to this publicly owned resource and is discussed in Chapter 4 of this EA.

Planned Trails

There are 12 planned trails within the project corridor. The trails are shown in Figure 3-5, Proposed Trails. The names of these trails are as follows:

- Redwood Road Trail System, Saratoga Springs and Bluffdale;
- Pony Express Trail, Saratoga Springs;
- SR-73 Trail, Saratoga Springs;
- Utah Lake Distributing Canal Service Road Trail, Saratoga Springs;
- 2100 North Trail, Saratoga Springs;
- Provo Reservoir Canal Service Road Trail, Bluffdale;
- Rock Hollow Trail, Bluffdale;
- Wood Hollow Trail (also known as the Bonneville Shoreline Trail Connector), Bluffdale;
- Porter Rockwell Trail, Bluffdale;
- Utah Lake Distributing Canal Service Road Trail, Bluffdale;
- Utah and Salt Lake Canal Service Road Trail, Bluffdale; and
- Rose Creek Trail, Bluffdale.

Land and Water Conservation Fund Act

The Land and Water Conservation Fund Act (LWCF) provides money for the development of outdoor parks and recreation areas that are protected by Section 6(f) of the LWCF. There are no recreation areas within the project corridor that have used LWCF money. Therefore, Section 6(f) requirements do not apply for this project.



3.3.4.2 Public Facilities

Within the project corridor or adjacent to SR-68 there are three public facilities: Camp Williams (Utah National Guard), Bluffdale City Cemetery, and the Bluffdale Public Works Shop.

Camp Williams

Camp Williams lies on both sides of SR-68 and is maintained and operated by the Utah National Guard. The camp provides support for several military and civilian activities at the federal, state, and local levels. It occupies approximately 28,000 acres on the west slope of the Traverse Mountains in both Utah and Salt Lake Counties. The Jordan River runs along the eastern border of the camp in the Jordan Narrows section; the camp's western border abuts the Oquirrh Mountains.

Bluffdale City Cemetery

The Bluffdale City Cemetery is located at approximately 14200 South Redwood Road. The cemetery is on the east side of SR-68 and is on a plat of land approximately two acres in size. A fence and large trees extend along the side of the cemetery bordering SR-68.

Bluffdale Public Works Shop

Directly north of the city cemetery is the Bluffdale Public Works Shop. This building is used for maintenance, repair, and storage of City equipment and vehicles. This is the former location of the Bluffdale Fire Department and city offices.

3.3.4.3 Utilities and Canals

Saratoga Springs

Culinary Water – Currently four wells provide culinary water for the City's residents and commercial establishments. The wells can be run in rotation or in conjunction with each other, depending on the system demands. Water distribution lines are located within the existing SR-68 roadway.

Sanitary Sewer – Wastewater is collected through a distribution system that outfalls to the Timpanogos Wastewater Treatment Plant on the northeast side of Utah Lake in Pleasant Grove. Sanitary sewer lines are located within the SR-68 roadway section.

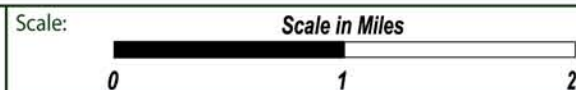
Gas – Natural gas is provided by Questar Gas Company. Service lines are buried throughout the project corridor. It is unknown the extent to which gas lines are located within the SR-68 corridor.

Electrical Services – Electrical services are provided by Rocky Mountain Power. Their service lines are located along the SR-68 right-of-way and cross over SR-68 in several locations. Power poles also exist along the SR-68 right-of-way.

Telephone Services – Telephone service in Saratoga Springs is provided by Qwest. Its telephone lines are attached to existing power poles and are also buried.

Southern End of Proposed Project: Saratoga Springs, MP 30.5

Northern End of Proposed Project: Bluffdale, MP 40.8



Planned Roadways
Municipal Boundaries

Legend:

Existing Trails
Proposed Trails
Existing Parks

References: Saratoga Springs Master Parks and Trails Plan, November 2006
Bluffdale City Planned Trails, November 2004
Mountainland Association of Governments, Master Trails Plan

Figure 3-5
Proposed Trails



Bluffdale

Culinary Water – Water is provided by the Jordan Valley Water Conservancy District located in Bluffdale. This service district supplies water to other southwestern Salt Lake County cities as well.

Sanitary Sewer – Wastewater is collected and distributed to the South Valley Water Reclamation Facility located north of Bluffdale in West Jordan.

Gas – Natural gas is provided by Questar Gas Company. Service lines are located throughout the project corridor.

Electrical Services – Electrical services are provided by Rocky Mountain Power. Its service lines are located along the SR-68 right-of-way and cross over SR-68 in several locations. Power poles also exist along the SR-68 right-of-way.

Rocky Mountain Power owns and operates a substation in Bluffdale, just north of Camp Williams. This substation is on the west side of SR-68 and is currently undergoing expansion and upgrades. Many other electrical lines originate or connect from this substation, including a 138 kilovolt (kV) and a 345 kV line that cross SR-68 just north of Camp Williams.

Telephone Services – Telephone service in Bluffdale is provided by Qwest. Its telephone lines are attached to existing power poles or are buried.

Jordan Aqueduct

The Jordan Aqueduct is a 36-mile long public water supply aqueduct that begins at the mouth of Provo Canyon and runs northwesterly to the Jordan Valley Water Treatment Center in Bluffdale. This aqueduct is buried under the existing SR-68 roadway just north of Camp Williams.

Saratoga Canal

The Saratoga Canal crosses under SR-68 approximately 2,600 feet north of the SR-73 intersection. This earthen canal delivers water to agricultural fields to the east and west of SR-68 in Lehi and Saratoga Springs.

Utah Lake Distributing Canal

This canal runs from the Murdock Pumping Station at Utah Lake and travels northward through Utah and Salt Lake Counties. The canal crosses under SR-68 in two locations: one about 3,000 feet north of the SR-73 intersection in Saratoga Springs and the other just north of 15000 South in Bluffdale.

Provo Reservoir Canal

The Provo Reservoir Canal is approximately 21.5 miles long and is located in both Utah and Salt Lake Counties. This canal crosses SR-68 in two locations: one between 10400 North and Camp Williams in Utah County and the other in Bluffdale about 2,600 feet north of the Jordan Narrows roadway and Camp Williams.



Utah and Salt Lake Canal

The Utah and Salt Lake Canal was constructed in 1881 to provide irrigation water for thousands of acres of land in the Salt Lake Valley. The canal begins at the Jordan River near the Utah/Salt Lake County border. It crosses under SR-68 in Bluffdale at approximately 14700 South.

South Jordan Canal

This canal diverts water from the Jordan River and runs northward along the western edge of the Salt Lake Valley to Kearns where it terminates. The canal never crosses SR-68 but is located east and runs directly adjacent to the roadway for approximately 900 feet.

3.3.4.4 Environmental Justice

It is important to determine the presence of minority and/or low-income populations or communities that may be located in the project study area. Based on the discussion above about population demographics, it has been determined that minority and low-income persons reside near the project study area. However, research did not indicate that minority or low-income populations or communities are located along the project corridor.

3.3.4.5 Right-of-Way and Relocations

The existing right-of-way along SR-68 varies. The project corridor is a mix of residential, commercial, agricultural, and undeveloped lands. The area is rapidly converting from agricultural and farming activities to more residential and commercial establishments. In Bluffdale, a number of residents are located near the existing roadway and have access directly onto SR-68.

3.3.5 Environmental Consequences

3.3.5.1 No Build Alternative

The No Build Alternative will not impact any of the social resources within the project corridor.

3.3.5.2 Proposed Action

Recreation Resources

The existing Veterans Memorial Park and the planned recreational trails will not be impacted by the Proposed Action. The Proposed Action which includes widening the SR-68 roadway will not preclude the planning, design, or construction of the planned trails that may cross the corridor in the future.

As part of the Proposed Action, three wildlife crossings will be constructed. Wildlife Crossing #3 in Bluffdale will be designed to accommodate the future Bonneville Shore Line Trail.

Public Facilities

The Proposed Action will have no adverse impact on public facilities. The existing access at Camp Williams will be maintained as part of the Proposed Action. A response has been received from the Utah National Guard with respect to Camp Williams and the Proposed Action (see letter in Appendix B). An underpass or bridge will be constructed within Camp Williams at SR-68 to allow for the movement between the east and west sides. This



underpass will also function as a shared wildlife crossing at Beef Hollow (see Figure A-22 in Appendix A).

Near the Bluffdale City Cemetery, the design of the SR-68 project was shifted to the west to avoid impacting the cemetery. It is unknown at this time whether the large trees in the park strip will be removed as part of the Proposed Action. The Proposed Action will have minor impacts to the Bluffdale Public Works Shop property which is located directly north of the cemetery. The Proposed Action will require approximately 2,300 square feet for right-of-way from the property occupied by the City. However, none of the buildings will be impacted and access will remain in the same location.

Utilities and Canals

Utilities for both Saratoga Springs and Bluffdale are located within the SR-68 right-of-way. UDOT will replace utilities that require relocation as part of the Proposed Action.

The Proposed Action will be constructed over the Jordan Aqueduct. There are no anticipated impacts resulting from the Proposed Action to this aqueduct. However, the Proposed Action will impact the canal crossings in the project corridor. The impacted sections of the canals will be replaced and or relocated; therefore, the functionality of these systems will not be impacted.

Saratoga Canal

Approximately 150 linear feet of the Saratoga Canal will be impacted through relocation and placement of a new culvert.

Utah Lake Distributing Canal

The Proposed Action will impact less than 20 linear feet of the Utah Lake Distributing Canal in Saratoga Springs. The Proposed Action will impact approximately 100 linear feet of the canal in Bluffdale because of the widening of SR-68.

Provo Reservoir Canal

SR-68 crosses the Provo Reservoir Canal in two locations within the project corridor. The Proposed Action will impact approximately 45 linear feet of the canal in Saratoga Springs. The Proposed Action will impact less than 45 linear feet of the canal in Bluffdale.

Utah and Salt Lake Canal

Approximately 40 linear feet of the Utah and Salt Lake Canal will be impacted by the Proposed Action.

South Jordan Canal

In order to accommodate the Proposed Action and widening of SR-68, approximately 850 linear feet of the South Jordan Canal will be impacted.

Environmental Justice

In the course of the project study, property owners along the corridor were contacted and/or attended project meetings. Based on this interaction with corridor residents, there was no indication that minority or low-income persons were residing immediately adjacent to the roadway. In addition, based on advertised names, there is no indication businesses along



the highway corridor are Hispanic or other ethnic type (e.g., a Mexican restaurant or grocery store selling specialty ethnic foods).

Windshield surveys did not identify any businesses owned or operated by minority (racial or ethnic) or low-income persons. Moreover, there were no concentrations or clusters of residences or businesses that comprised a minority or low-income community or business district that focused on serving minority or low-income persons residing in the larger area.

In conclusion, although there are minority and/or low-income persons residing in the project study area, research did not indicate that minority or low-income populations or communities are located adjacent to the project corridor. No minority or low-income populations have been identified that will be subjected to disproportionately high or adverse effects by the Proposed Action. Given the low percentage of minorities present, the Proposed Action is not expected to have an impact on environmental justice population groups.

It is possible that one or more property owners adjacent to the Proposed Action are minority or low income residents, but these residents would not be affected differently from other adjacent property owners. Therefore, the Proposed Action has complied with the provisions of Executive Order 12898.

Right-of-Way and Relocations

A total of 161 parcels will be impacted by the Proposed Action; six full acquisitions and 155 partial impacts. Approximately 40.9 acres of land will be acquired along the project corridor. Property acquisition in support of the Proposed Action will result in the conversion of this land to highway use. The total potential acquisition will affect the following number of acres within each of the following existing land uses: agricultural 20.5 acres, commercial (existing and proposed) 1.9 acres, residential 6.2 acres, Institutional (Camp Williams) 4.6 acres, undeveloped 6.8 acres, and other 0.9 acres.

The Proposed Action will require the relocation of a maximum of five residences and one business along the SR-68 corridor due to the proximity of these properties to the new roadway or loss of access to property. The relocations are shown in Figure 3-6, Property Relocations with the Proposed Action.

3.3.6 Mitigation

Public Facilities

The public facilities impacted by the Proposed Action include Camp Williams and the Bluffdale Public Works Shop. However, the impacts are minor and will not require the relocation of any structure or building at these two facilities. Right-of-way acquisition will be in accordance with the Uniform Relocations and Real Property Acquisition Policies Act. UDOT will continue to coordinate with the Utah National Guard (Camp Williams) and Bluffdale City through the design and construction phase of this project.

Utilities and Canals

The utilities impacted by the Proposed Action will be replaced or relocated. UDOT will coordinate with the affected utility companies and cities during the design and construction phase of this project.



The canal crossings impacted by the Proposed Action will be restored to their original design. Canal crossings will be designed to maintain the same flow rate and capacity prior to construction of SR-68. UDOT will continue to coordinate with each affected canal company during design and construction.

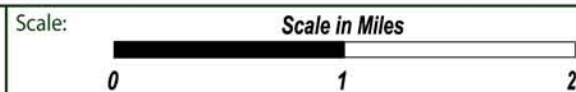
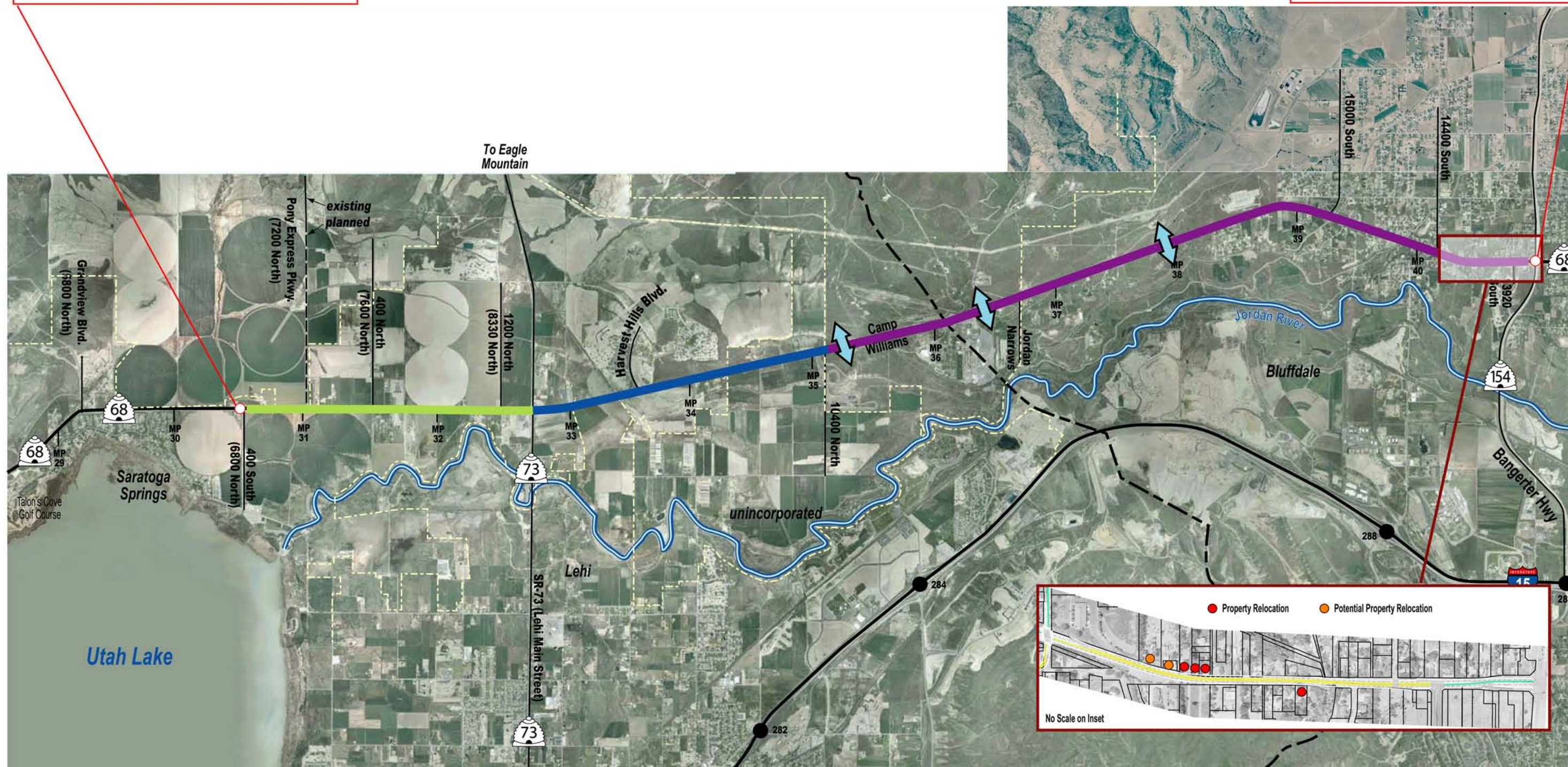
Right-of-Way and Relocations

The loss of residences or businesses and the required right-of-way resulting from the Proposed Action will be mitigated in accordance with federal, state, and local relocation policies. The acquisition and relocation program will be done in accordance with the Uniform Relocations Assistance and Real Property Acquisition Policies Act of 1970, as amended. Relocation resources will be available to each relocated residence and business without discrimination. UDOT will evaluate the need to provide early right-of-way acquisition for the property owners that demonstrate a hardship resulting from the project.



Southern End of Proposed Project: Saratoga Springs, MP 30.5

Northern End of Proposed Project: Bluffdale, MP 40.8



Planned Roadways
Municipal Boundaries

Property Relocation
Potential Property Relocation

Legend: **Five-Lane Roadway:** Four lanes with center turn lane, shoulders, bicycle lanes, curb, gutter, sidewalk and park strip.

Five-Lane Roadway: Four lanes with center turn lane, shoulders, bicycle lanes, curb, gutter. Sidewalk to be constructed by developers.
Five-Lane Roadway: Four lanes with center turn lane, shoulders, bicycle lanes, curb, gutter. Sidewalk and park strip to be determined.

Please See Figures 2-1 and 2-2 for Visual Depictions of Proposed Five-Lane Roadway Cross-Sections

Approximate Location of Wildlife Underpass Crossing with Fencing

Figure 3-6
Property Relocations with the Proposed Action



3.4 ECONOMICS

3.4.1 Affected Environment

Both Utah County and Salt Lake County have experienced “exceptionally strong job growth and very low unemployment” in 2006, and economic conditions in these jurisdictions “are better now than at any time during the last ten years (Utah Department of Workforce Services, Winter 2006a and 2006b).” Construction has been the strongest in the industrial sector of the economy within these jurisdictions. Residential housing and commercial and industrial development have been strong and have contributed to the positive economic climate in the region. In Utah County, the number of new dwelling unit permits issued in 2005 was 5,819, a 23% increase over permits issued in 2004 (Utah Department of Workforce Services, 2006a and 2006b). In Salt Lake County, the number of new residential dwelling units receiving permits in 2005 was 7,746, a 19.3% increase over permits allowed in 2004.

Tax revenues and property values have been increasing as a result of strong economic conditions. Total assessed values in Salt Lake County increased by 6.8% between 2004 and 2005, and assessed values in Utah County increased by 5.5% during the same period.

3.4.2 Environmental Consequences

3.4.2.1 No Build Alternative

The No Build Alternative will have no impact to the economic conditions along the corridor.

3.4.2.2 Proposed Action

The Proposed Action will have no impact on the regional economy beyond existing conditions. The improved mobility provided by the proposed improvements may benefit adjacent businesses and services by providing easier and improved access to and from the roadway.

3.4.3 Mitigation

No adverse impacts to the economy are anticipated from the Proposed Action; therefore, no mitigation is required.

3.5 PEDESTRIAN AND BICYCLIST CONSIDERATIONS

3.5.1 Regulatory Setting

FHWA and UDOT are required to consider the safe accommodation of pedestrians and bicyclists during development highway projects. Both agencies are committed to complying with the 1990 Americans with Disabilities Act (ADA) by building transportation facilities that provide equal access for all persons.

3.5.2 Affected Environment

Within the project study area there are intermittent areas of sidewalk and two locations where crosswalks exist; 14400 South and Bangerter Highway in Bluffdale.

SR-68 is used by local cyclists for recreational rides. There are currently no bicycle lanes, and cyclists ride in the shoulders or in the travel lanes. As discussed in Chapter 1, the



existing shoulder does not meet current standards for width based on vehicle speeds and type of facility. The vast majority of the SR-68 roadway in Utah County within the project study area does not have shoulders that cyclists can use.

3.5.3 Environmental Consequences

3.5.3.1 No Build Alternative

There will be no change to existing conditions with the No Build Alternative. Therefore, this alternative will not improve safety conditions along the corridor for bicyclists.

3.5.3.2 Proposed Action

Sidewalks will be constructed along the project corridor in areas where they are not or will not be provided by developers, as illustrated on the drawings in Appendix A. A five-foot bicycle lane will be constructed within the roadway shoulder as part of the Proposed Action. The Proposed Action will benefit improve pedestrian and bicycle facilities within the project corridor.

3.5.4 Mitigation

There will be no adverse impacts to pedestrian and bicycle facilities as a result of the Proposed Action; therefore, no mitigation is required.

3.6 AIR QUALITY

3.6.1 Regulatory Setting

NEPA guidance provided by FHWA's *Guidance for Preparing Environmental Documents* (T6640.8A) suggests that both "mesoscale" and "micro-scale" air quality concerns be discussed in an environmental analysis. Mesoscale concerns refer to project impacts on regional air quality, and micro-scale concerns are related to localized air quality impacts.

Mesoscale concerns are generally addressed by the Metropolitan Planning Organization (MPO) in the Long Range Transportation Planning process and Transportation Improvement Program. Micro-scale concerns, often called Hot Spot analysis, refer to the localized emissions from a given project. Project-level air quality impacts are generally not addressed at the regional level and must be evaluated during the environmental analysis of each project.

Both mesoscale and micro-scale air quality concerns are assumed to be addressed when the proposed project meets the requirements of the Clean Air Act (CAA) as amended. Transportation projects are said to "conform" if the proposed project meets the requirements of Section 176(c) of the Clean Air Act and does not alone or in combination with other planned projects result in the following: create a new violation of the National Ambient Air Quality Standards, worsen existing violations of the National Ambient Air Quality Standards, or delay attainment of the National Ambient Air Quality Standards in non-attainment or maintenance areas.

3.6.1.1 Air Quality Conformity Requirements

The CAA 42 U.S.C. 7476(c) requires federal actions to conform to the State Implementation Plan (and Maintenance Plan) approved under Section 110 of the Act. The Transportation Conformity Rule, Section 40 CFR Parts 51 & 93, establishes standards and guidelines to be

followed in determining conformity of a proposed transportation project to the State Implementation Plan. Specifically, the proposed transportation project must be part of a Long Range Transportation Plan which demonstrates that the proposed project, when analyzed regionally with all other proposed transportation improvement projects, conforms to the control strategies and emissions levels outlined in the State Implementation Plan.

3.6.2 Affected Environment

The Proposed Action is consistent with both the Wasatch Front Regional Council (WFRC) Regional Transportation Plan and the Mountainland Association of Governments (MAG) Regional Transportation Plan. The WFRC Regional Transportation Plan was adopted by the WFRC in December 2003 and was found to conform to air quality standards by the U.S. DOT. The MAG Regional Transportation Plan was adopted by MAG in March 2005 and found to conform to air quality standards by the U.S. DOT on June 2, 2005. The WFRC and MAG are presently in the process of updating their Regional Transportation Plan. The proposed improvements to SR-68 are included in both plans, and a conformity determination of these revised plans is expected to be complete in June 2007.

Utah and Salt Lake Counties are presently non-attainment areas for Particulate Matter of less than 10 Microns (PM_{10}).

3.6.3 Environmental Consequences

3.6.3.1 No Build Alternative

Traffic congestion and delay are expected to increase under the No Build Alternative which could have an adverse affect on air quality. Since no federal action is required for the No Build Alternative, air quality impacts are addressed subjectively in this section to provide for a comparison against the Proposed Action.

Mesoscale Analysis

The No Build Alternative is inconsistent with the WFRC and MAG Regional Transportation Plan. Therefore, the No Build Alternative has not been analyzed for regional, mesoscale, analysis.

Microscale Analysis

According to the UDOT Air Quality Hot Spot Manual (May 2003), mainline volumes on two lane highways can achieve a maximum volume of 30,000 vehicles per on the mainline and up to 25,000 vehicles per day at signalized intersections prior to a concern requiring further analysis for hot spot violations of carbon monoxide. The No Build Alternative of SR-68 would not pose a mainline problem. Intersection hot spot levels are above the screening analysis at the following intersections.

- SR-73;
- 14400 South; and
- Bangerter Highway.

3.6.3.2 Proposed Action

Mesoscale Analysis

As discussed, regional conformity as performed by the WFRC and MAG is necessary to address mesoscale air quality analysis requirements. The Proposed Action is consistent

with conforming Regional Transportation Plans. Therefore, it meets the mesoscale air quality requirements and is included in a conforming Long Range Transportation Plan and Transportation Improvement Program.

Micro-Scale Analysis

In addition to this regional analysis, localized project analysis is also required in Carbon Monoxide (CO) and PM₁₀ non-attainment areas. Utah and Salt Lake Counties are presently non-attainment areas for PM₁₀. Although the project is outside the CO non-attainment area boundary, the entire project has been screened for its possible effect on CO. A localized (“hot spot”) PM_{2.5} and PM₁₀ analysis methodology has not been adopted by EPA so quantitative localized analysis is not required until a methodology is adopted. Therefore, a qualitative assessment of the project corridor was performed for PM₁₀.

PM₁₀ concentrations are related to a combination of direct PM₁₀ sources, such as fugitive dust that comes from increased vehicle miles of travel and secondary reactions of nitrogen oxide (NO_x) and sulfur oxide (SO_x) which form PM₁₀ in the atmosphere. Because of the association of particulate violations occurring during prolonged winter inversions, it is assumed that traffic volumes and corresponding level of service have less impact on PM₁₀ concentrations than the larger regional trends in the emission rates and industrial controls. Therefore, it can be expected that PM₁₀ in Utah and Salt Lake Counties will remain a regional issue related to prolonged temperature inversions and a gradual build-up of PM₁₀-related pollutants and will not be created by local PM₁₀ concentrations along specific streets in fringe areas. In addition, the PM₁₀ concentrations in Salt Lake and Utah Counties have been declining. This is attributed to the implementation of improved emissions technology and tougher diesel fuel standards.

Carbon monoxide hot spot analysis was performed using the screening criteria in UDOT’s *Air Quality Hot Spot Manual*. Table 3-2 shows the predicted average daily traffic volume and the maximum average daily traffic volumes that are considered pre-screened by the CAL3QHC model for segments of SR-68. Traffic volumes below these maximum levels are not expected to create CO hot spot concentrations that approach the National Ambient Air Quality Standards.

TABLE 3-2, PREDICTED AVERAGE DAILY TRAFFIC VOLUME

Segment		2030 Average Daily Traffic Volume	Maximum Daily Traffic Volume
From	To		
Future Pony Express Parkway	SR-73	41,000	50,000
SR-73	Camp Williams	41,000	50,000
Camp Williams	14400 South	42,000	50,000
14400 South	Bangerter Hwy	44,000	50,000

Source: Air Quality Hot Spot Manual, UDOT 2003

All segments of the Proposed Action are shown to have predicted mainline traffic volumes below the maximum daily traffic volume that might create violations of the CO air quality standards. For that reason, the Proposed Action passes the CO screening analysis for micro-scale concerns along the mainline.

Several signalized intersections under the Proposed Action are anticipated operate at level of service of D or worse. Table 3-3 displays the comparison of total intersection approach volumes as compared to the intersection screen threshold volumes according to UDOT's Air Quality Hot Spot Manual.

TABLE 3-3, INTERSECTION APPROACH VOLUME FOR INTERSECTIONS RESULTING IN LOS D OR WORSE

Intersection	Redwood Road Approach Volume (ADT)	Screening Maximum	Cross Street Approach Volume (ADT)	Screening Maximum	Result
400 North	46,900	45,000	14,500	25,000	Fail
SR-73	38,400	45,000	39,900	45,000	Pass
Harvest Hills Blvd.	36,300	45,000	13,100	25,000	Pass
15000 South	40,100	45,000	6,800	25,000	Pass
14400 South	40,400	45,000	17,900	25,000	Pass
Bangerter Highway	34,700	45,000	78,000	45,000	Fail

Based on the results of Table 3-3, the CAL3QHC model was run for the intersections of Bangerter Highway and SR-68 and the intersection of 400 North and SR-68. Upon further analysis, both intersections result in air quality concentrations below the National Ambient Air Quality Standards (NAAQS). Table 3-4 displays the results of the air quality hot spot analysis using the CAL3QHC model. Therefore, there are no carbon monoxide concerns associated with the proposed action.

TABLE 3-4, CAL3QHC MODEL RESULTS

Intersection	1 Hour		8 Hour		Result
	Concentration	Standard	Concentration	Standard	
400 North	15.5 ppm	35.0 ppm	8.5 ppm	9.0 ppm	Pass
Bangerter Highway	16.4 ppm	35.0 ppm	6.7 ppm	9.0 ppm	Pass

Air toxics are an increasingly important air pollution issue. The Clean Air Act identified 188 air toxics, also known as hazardous air pollutants. The U.S. Environmental Protection Agency (EPA) has assessed this expansive list of toxics and identified a group of 21 as mobile source air toxics, which are set forth in an EPA final rule, *Control of Emissions of Hazardous Air Pollutants from Mobile Sources* (66 FR 17235). EPA also extracted a subset of this list of 21 that it now labels as the six priority Mobile Source Air Toxics (MSATs). These are benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene. Although these MSATs are considered the priority transportation toxics, the EPA stresses that the lists are subject to change and may be adjusted in future rules. The EPA has issued a number of regulations that will dramatically decrease MSATs through cleaner fuels and cleaner engines. According to an FHWA analysis, even if vehicle miles traveled increases by 64 percent, reductions of 57 percent to 87 percent in MSATs are projected from 2000 to 2020. Therefore, the Proposed Action will not worsen air pollution issues as it relates to air toxics. Also, stricter regulations on diesel fuels have resulted in cleaner air.

3.6.4 Mitigation

Based on the analysis presented, the Proposed Action will not impact air quality; therefore, no mitigation is required. A letter received from the Utah Office of the Governor, Public

Land Policy Coordination, states that an air quality permit is not needed for this project (see letter in Appendix B).

3.7 NOISE

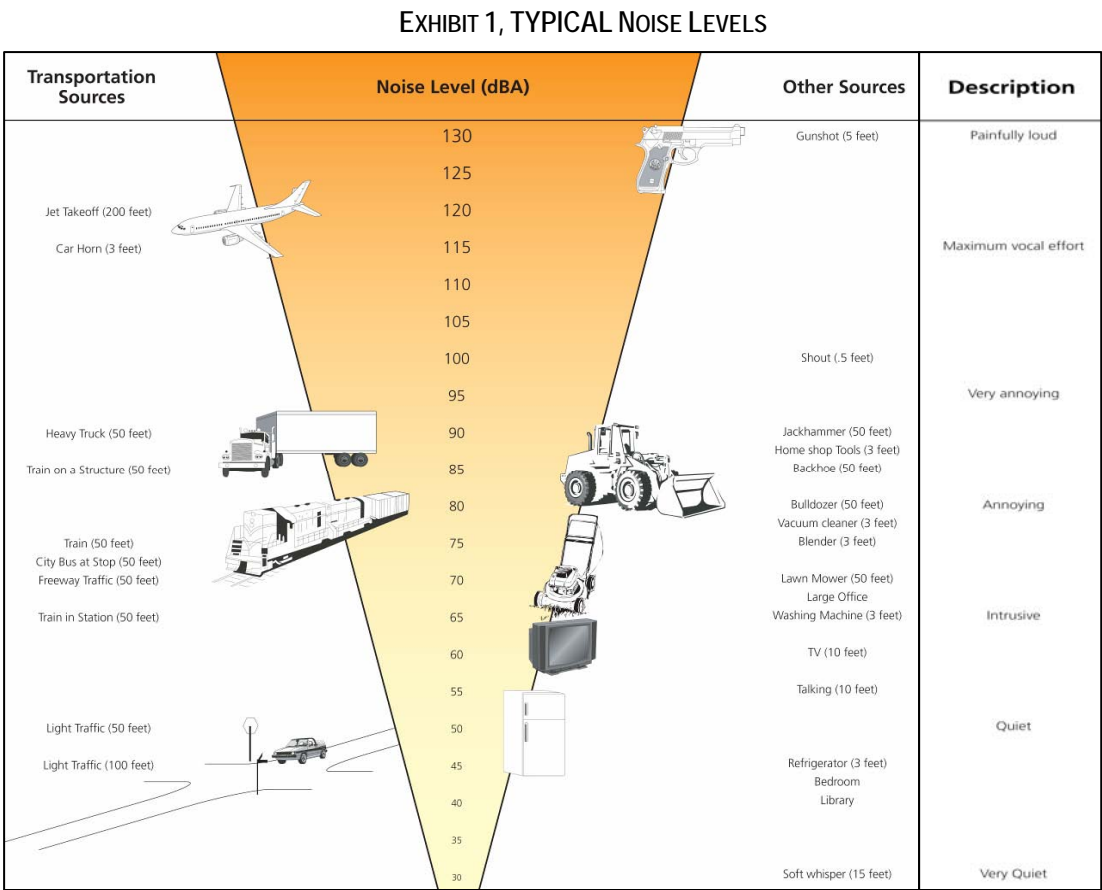
3.7.1 Regulatory Setting

For federally funded highway projects, noise impacts are defined under the Procedures for Abatement of Highway Traffic Noise and Construction Noise (23 CFR 772). UDOT has adopted FHWA guidelines and have developed specific noise standards that are found in its Noise Abatement Policy, 08A2-1. UDOT’s highway traffic noise prediction requirements, noise analysis, and noise abatement criteria are consistent with Utah Code 72-6-111 and 112. Noise abatement measures have been considered as part of the Proposed Action in accordance with UDOT policy.

3.7.2 Affected Environment

A Noise Technical Report was prepared for this project that analyzed noise impacts along the project corridor. This report calculated the existing, future No Build, and Proposed Action noise levels. It also includes an analysis of noise wall heights and locations.

Noise is measured in decibels (dBA) on an A-weighted logarithmic scale. To the human ear a noise level sounds as though it doubles for every 10 dBA increase. Exhibit 1 shows the typical noise ranges that can be expected for everyday machines as perceived by humans at a given distance.



Traffic noise from SR-68 and other major roadways intersecting the project corridor (SR-73, 14400 South, and Bangerter Highway) are the dominant noise sources in the project area. Traffic noise levels depend on the number and type of vehicles, speed, as well as the pavement type. Because traffic noise varies over time, sound levels are typically described by using equivalent sound levels (L_{eq}), which represent average sounds for a specified time, usually an hour.

Noise levels were measured at seven sites along the project corridor to identify major noise sources and to characterize weekday background noise levels. The measurement locations represent a variety of noise conditions and noise-sensitive uses near the project area. Noise levels were measured during the PM peak travel time (4:00 to 6:00). Table 3-5 lists the measured sites with their addresses and their corresponding L_{eq} . The measured sites are also shown on Figure 3-7, Noise Impacts.

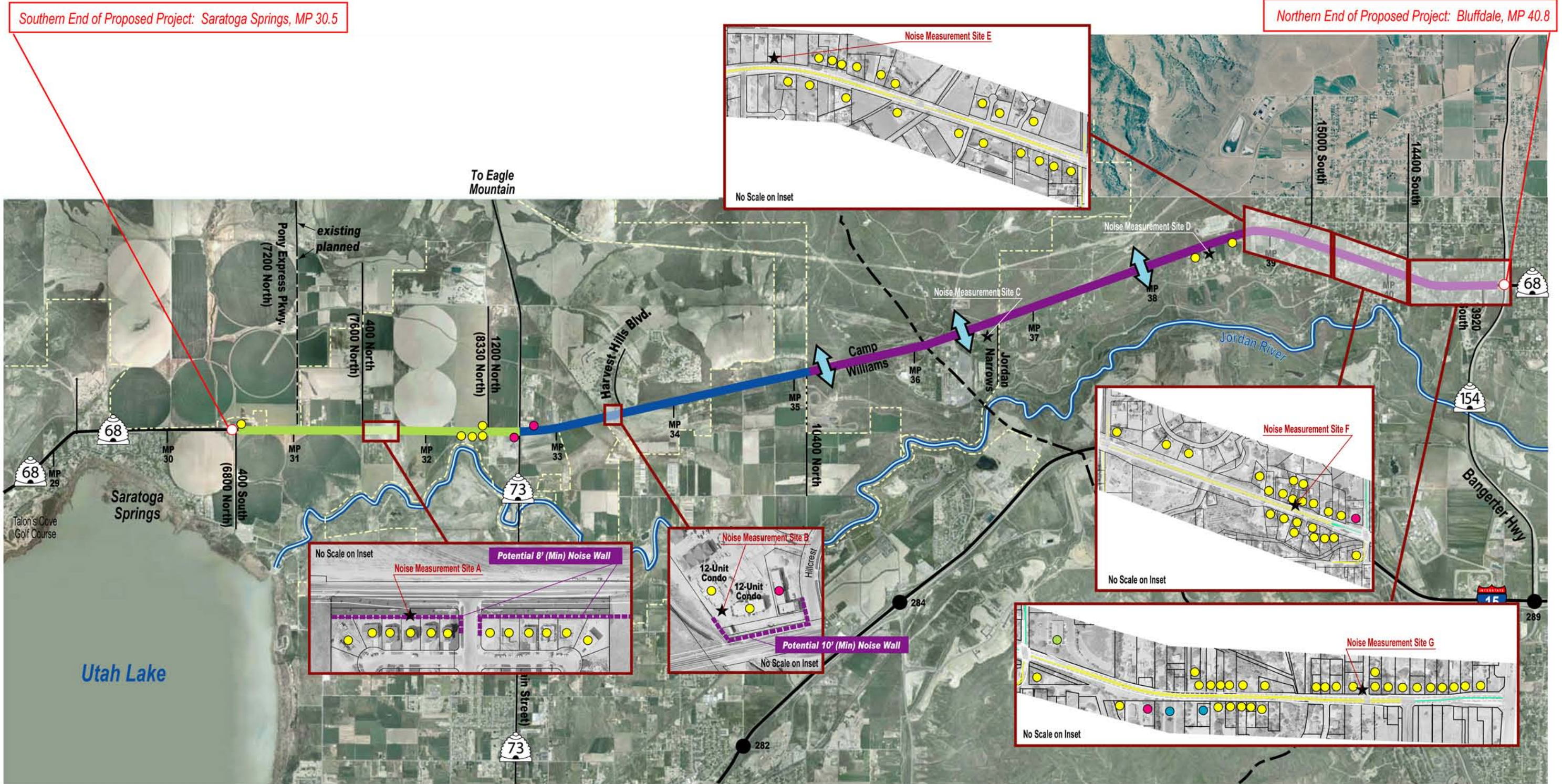
TABLE 3-5, NOISE MEASUREMENT SITES

Site	Approximate Address	Land Use Type	Measured Hourly L_{eq}
A	300 North SR-68, Saratoga Springs (near Dalmore Meadows subdivision)	Residential	67.2
B	Hillside Condominiums, Saratoga Springs	Residential	66.6
C	Veterans Memorial Park, Camp Williams	Park, cemetery	54.7
D	17000 South SR-68, Bluffdale (near River View Drive)	Residential	57.1
E	16000 South SR-68, Bluffdale	Residential	66.1
F	14500 South SR-68, Bluffdale	Residential	76.0
G	13970 South SR-68, Bluffdale	Residential	69.7

3.7.3 Environmental Consequences

Traffic Noise Model (TNM) Version 2.5 was used to predict 2030 traffic noise levels (for the Proposed Action and No Build Alternative) and the existing noise levels along the corridor. TNM is used to estimate noise levels at specific points by considering interactions between different noise sources, the preliminary roadway design, and the effects of topography on the noise level. Existing land uses in the project area consist primarily of low density residential, commercial, and agricultural uses. The measured sites in Table 3-5 were then used to calibrate TNM to ensure that the predicted design year noise levels were accurately generated.

A traffic noise impact occurs when the design year (2030) noise levels approach or exceed federal and state noise abatement criteria (NAC) for sensitive noise receptors. Table 3-6 lists the UDOT Noise Abatement Criteria. Most of the project corridor is considered Activity Category B; there are no Activity Category A receptors in the project study area. Therefore, if the Proposed Action generates a noise level of 65 dBA or greater at a sensitive receiver, such as a residence, a noise impact occurs. Additionally, UDOT considers a noise impact to occur if there is an increase of 10 dBA or more between the existing noise level and the design year (2030).



Scale:

Scale in Miles

0 1 2

Planned Roadways

Municipal Boundaries

Residential Properties Impacted by Noise

Commercial Properties Impacted by Noise

Institutional Properties Impacted by Noise

Church Properties Impacted by Noise

Noise Measurement Sites

Potential Noise Walls

Figure 3-7

Noise Impacts

Legend:

Five-Lane Roadway: Four lanes with center turn lane, shoulders, bicycle lanes, curb, gutter, sidewalk and park strip.

Five-Lane Roadway: Four lanes with center turn lane, shoulders, bicycle lanes, curb, gutter. Sidewalk to be constructed by developers.

Five-Lane Roadway: Four lanes with center turn lane, shoulders, bicycle lanes, curb, gutter. Sidewalk and park strip to be determined.

Please See Figures 2-1 and 2-2 for Visual Depictions of Proposed Five-Lane Roadway Cross-Sections

Approximate Location of Wildlife Underpass Crossing with Fencing

TABLE 3-6, UDOT NOISE ABATEMENT CRITERIA

Activity Category	Leq(h), dBA*	Description of Activity Category
A	55 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	65 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, hospitals, and cemeteries.
C	70 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands.
E	50 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Notes: Based on FHWA Noise Abatement Criteria, 23 CFR 772

*Hourly A-Weighted Sound Level in Decibels, Reflecting a 2 dBA "Approach" Value Below 23 CFR 772 Values

3.7.3.1 No Build Alternative

The No Build Alternative will not impact noise-sensitive land uses along the project corridor. However, as the project area continues to develop and traffic increases with population and commercial growth the ambient noise levels will increase.

3.7.3.2 Proposed Action

The traffic noise analysis used the projected peak hour traffic data and speeds for the design year (2030); the existing conditions year modeled was 2007. Receptors within 500 feet of the Proposed Action were modeled as part of this analysis using TNM. Activity Category B land uses include all residences, parks, and churches, and Activity Category C land uses includes commercial properties.

With the project improvements, in 2030 noise levels along SR-68 are expected to range from 54 dBA to 76 dBA; an increase of two to nine decibels above existing noise levels. This noise increase is a result of additional pavement width that places travel lanes closer to receptors and increased traffic volumes. Figure 3-7, Noise Impacts, shows the location of each impacted receiver, both residential and commercial, that will experience a noise level above the acceptable UDOT NAC threshold. A noise contour map, included in the Noise Technical Report, has been prepared that shows the noise levels for both the No Build Alternative and the Proposed Action in the design year 2030.

The Proposed Action will have noise impacts on 18 single-family residences, two 12-unit condominiums (counted as 24 impacts), and three commercial properties in Saratoga Springs, as defined by UDOT's NAC. In Bluffdale, there will be impacts on 73 single-family residences, one church, two commercial properties (one is a potential relocation), the Bluffdale City Public Works shop, and a portion of the Bluffdale City Cemetery. Therefore, the overall noise impacts total 115 residential units, a church, a cemetery, and five commercial properties.

3.7.4 Mitigation

Before noise reduction steps can be taken, conditions specified by state and federal

regulations must be met and it must be determined that noise abatement measures are reasonable and feasible. Measures are considered reasonable and feasible when noise levels are reduced by a minimum of 5 dBA, the cost of providing the measures is within standards specified by UDOT, and engineering constraints are met. If a proposed reduction measure does not meet these conditions, then the abatement measure is not considered reasonable and its use will not be recommended. Several techniques are available to reduce potential noise impacts associated with the Proposed Action. These are discussed below.

3.7.4.1 Traffic Management Measures

This includes such measures as restricting vehicle speeds and the use of compression breaks by heavy trucks to reduce highway noise. SR-68 is considered an arterial that is intended to carry a combination of local traffic and through traffic, and to connect local roadways to the highway system. Arterials are designed to emphasize the movement of traffic along the highway, as opposed to the provision of access to adjacent land uses. Therefore, restricting the speed of vehicles below the applicable highway standards would not allow the project to meet its purpose and need as defined in Chapter 1.

3.7.4.2 Alteration of Horizontal and Vertical Alignments

This measure includes adjustments in the alignment of the roadway, such as lowering its depth or moving it farther from a receiver. Because of the number access points onto SR-68, lowering its vertical alignment to reduce noise impacts is not reasonable. Access would not be able to be provided at a number of residences and commercial properties, which would increase the number of relocations. As discussed in Chapter 2, the Proposed Action has been designed to minimize the overall impacts to the human environment (i.e. cultural resources, relocations, and agricultural impacts) as well as the natural environment. Realigning the roadway farther from impacted receivers is not reasonable since in many locations they are located on both sides of the roadway.

3.7.4.3 Pavement Surface Considerations

Rubberized asphalt may be applied to lower noise from vehicles using a highway. However, this measure is not considered reasonable due to high costs.

3.7.4.4 Noise Barriers

Noise barriers, such as walls or earth berms, may be used to block or deflect noise from reaching nearby buildings. Use of noise walls or berms may be considered where they achieve at least a 5 dBA noise reduction to front row receivers.

In order for noise walls to be effective and reduce noise levels, they must be continuous without breaks in the wall. Noise walls with breaks in them are ineffective at achieving a 5dBA noise level reduction. For much of the project corridor, walls are not considered appropriate because they would restrict access to SR-68. To be effective, noise walls must be contiguous. Within Bluffdale, a contiguous noise wall could not be constructed due to the high number of residential and business accesses onto SR-68.

Noise walls must not impede access from adjacent properties. If access was restricted from properties along SR-68 to construct a noise wall, additional right-of-way would be required to provide new access points to these areas. Costs associated with ROW purchase, and to construct new roadway access, would be too high for this approach to be feasible.

In addition noise walls must be economically feasible. UDOT's policy sets a limit of \$25,000 per benefited receiver. A benefited receiver are those that will have a 5 dBA reduction for a given noise wall. For this analysis the cost per linear foot of noise wall was \$205. This amount is based on recent low-bid costs for noise wall construction for UDOT. UDOT's policy also requires a simple majority to construct the noise wall from front row receivers that would benefit from the noise wall. If the cost of the noise wall exceeds UDOT's cost per benefited receiver or a simple majority of front row receivers are not benefited then the noise wall will not be constructed.

Two areas where noise walls could be used were evaluated and determined to be reasonable and feasible: the Dalmore Meadows subdivision and the Hillcrest Condominiums, both in Saratoga Springs. Each is shown in Figure 3-7.

Noise Wall #1 (Dalmore Meadows)

Noise wall #1 would be approximately 1,256 feet long and a minimum of eight feet high. This noise wall would include a break at the entrance to the Dalmore Meadows subdivision. This noise wall would reduce noise levels by more than 5 dBA for 11 residences within this subdivision; all of the front row receivers, except one, would receive at least a 5 dBA reduction. This noise wall is expected to cost approximately \$256,250, or \$23,407 per benefited residence.

Noise Wall #2 (Hillcrest Condominiums)

Impacted residential units at this location include two 12-unit condominiums. A noise wall for this area was modeled; a barrier about 436 feet long and a minimum of 10 feet high would reduce noise levels by approximately 8 dBA. A 10 foot high noise wall would benefit at least four receivers at this location (bottom level of condominium units that face SR-68). The cost of the noise wall would be approximately \$89,380 (\$22,345 per benefited receiver); this is within UDOT's abatement cost limit of \$25,000 per residence.

As stated in UDOT's Noise Policy, a noise wall will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents or land owners vote through balloting in favor of a noise wall. In the case of these two noise walls, all of the impacted receivers are on the front row. Balloting will occur before the decision document is completed to determine whether a noise wall will be constructed at these two locations.

3.8 GEOLOGY, SOILS, AND TOPOGRAPHY

3.8.1 Regulatory Setting

The FHWA has "Guidelines for Minimizing Possible Soil Erosion from Highway Construction" (23 CFR 650B) and Utah State laws provide guidelines for protecting against soil erosion. As part of these guidelines, the NRCS has prepared a soil survey for both Utah and Salt Lake Counties.

3.8.2 Affected Environment

The geology and topography of the project area are comprised of the deposits of flowing water from the former Lake Bonneville and the tributaries to the Jordan River. On each side of SR-68 are the rocky, often steep, slopes of the Traverse Mountains; the Jordan River is



located east of the project corridor. The project area has a varied topography with slopes that range from shallow to steep.

Soils in the project area were formed as sand, silt, clay, gravel, or other matter and were deposited in an alluvial fan and in outwash areas. The alluvial soils in the area are layered with materials formed at the bottom or along the lake shore; these materials are termed lacustrine. In addition, loamy soils (a mixture of sand, clay, silt, and organic matter) are found in the project area. Specific soil types identified in soil surveys include Bramwell silty loam, Dry Creek complexes, Juab loam, Mellor silt loam, and Pleasant Vale Loam.

Some of the soil types identified in the project area are indicative of potential erosion properties. Most of the project area exhibits low-to-moderate soil erodibility factors; a high soil erodibility factor area has been mapped within two miles of the corridor.

3.8.3 Environmental Consequences

3.8.3.1 No Build Alternative

There will be no impacts to soils, geology, or topography with the No Build Alternative.

3.8.3.2 Proposed Action

The Proposed Action will have no long-term impacts to soils, geology, or topography. There is the potential for erosion during construction, which is discussed in Section 3.19 of this chapter.

3.8.4 Mitigation

There will be no adverse impacts as a result of the Proposed Action, and therefore, no mitigation is required.

3.9 FLOODPLAINS

3.9.1 Regulatory Setting

The U.S. Department of Homeland Security, Federal Emergency Management Agency (FEMA) delineates the 100-year floodplains on Flood Insurance Rate Maps (FIRMs). In accordance with Executive Order 11988 and 23 CFR 650, a floodplain inventory within the project area was developed by FEMA.

3.9.2 Affected Environment

Within the project area only one floodplain has been identified by FEMA. This floodplain is in Bluffdale and called Wood Hollow Drainage. Located in southern Salt Lake County and Bluffdale, Wood Hollow Drainage originates in the Traverse Mountains to the west. In steep areas, the channel is well defined and V-shaped; as slopes become less steep, the channel is wider and shallower. However, the floodplain does not cross to the east side of SR-68 (see Figure 3-8, FEMA Floodplains).

3.9.3 Environmental Consequences

3.9.3.1 No Build Alternative

There will be no impact to regulated floodplains as a result of the No Build Alternative.

3.9.3.2 Proposed Action

The Proposed Action will not extend the footprint into regulated flood areas, except at the intersection with a Zone A floodplain near the substation between Mile Post (MP) 38 and MP 39. UDOT will design the project in accordance with applicable regulations and will not impact the floodplain. Roadway elevations will be above the Wood Hollow floodplain so that flooding will not interfere with this transportation facility. In addition, the culvert at this location that extends to the east side of SR-68 will be properly sized for storm water and spring runoff in Wood Hollow Drainage (if any).

3.9.4 Mitigation

The roadway design will comply with floodplain regulations to avoid impacts; therefore, no mitigation is required.

3.10 WATER QUALITY

3.10.1 Regulatory Setting

Water quality is regulated through the U.S. Clean Water Act (CWA) and the Utah Administrative Code R317 – Water Quality. The Utah Division of Water Quality (UDWQ) and Division of Drinking Water are the agencies with responsibility for these regulations.

Under the CWA, the State is required to establish and maintain water quality standards designed to protect, restore, and preserve the qualities of waters by establishing narrative and numeric water quality standards. These standards are based on listed beneficial uses, such as drinking water, supporting game fish, or recreation. The evaluation criteria apply to each of the beneficial uses assigned to waters of the State. When a lake, river, or stream fails to meet water quality standards established for its designated use, Section 303(d) of the CWA requires the State to place the water body on a list of “impaired” waters. Once the water body is on the Section 303(d) list of impaired waters, the state must prepare an analysis called a Total Maximum Daily Load (TMDL). The UDWQ conducts an analysis on the impaired waters to determine the maximum contaminant load (related to the TMDL) that the water body can accept and still meet water quality standards. Best Management Practices (BMPs) are used to control waste discharges under these regulations. The BMPs are modified as necessary to protect downstream designated uses.

3.10.2 Affected Environment

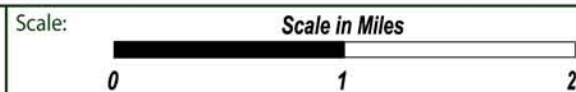
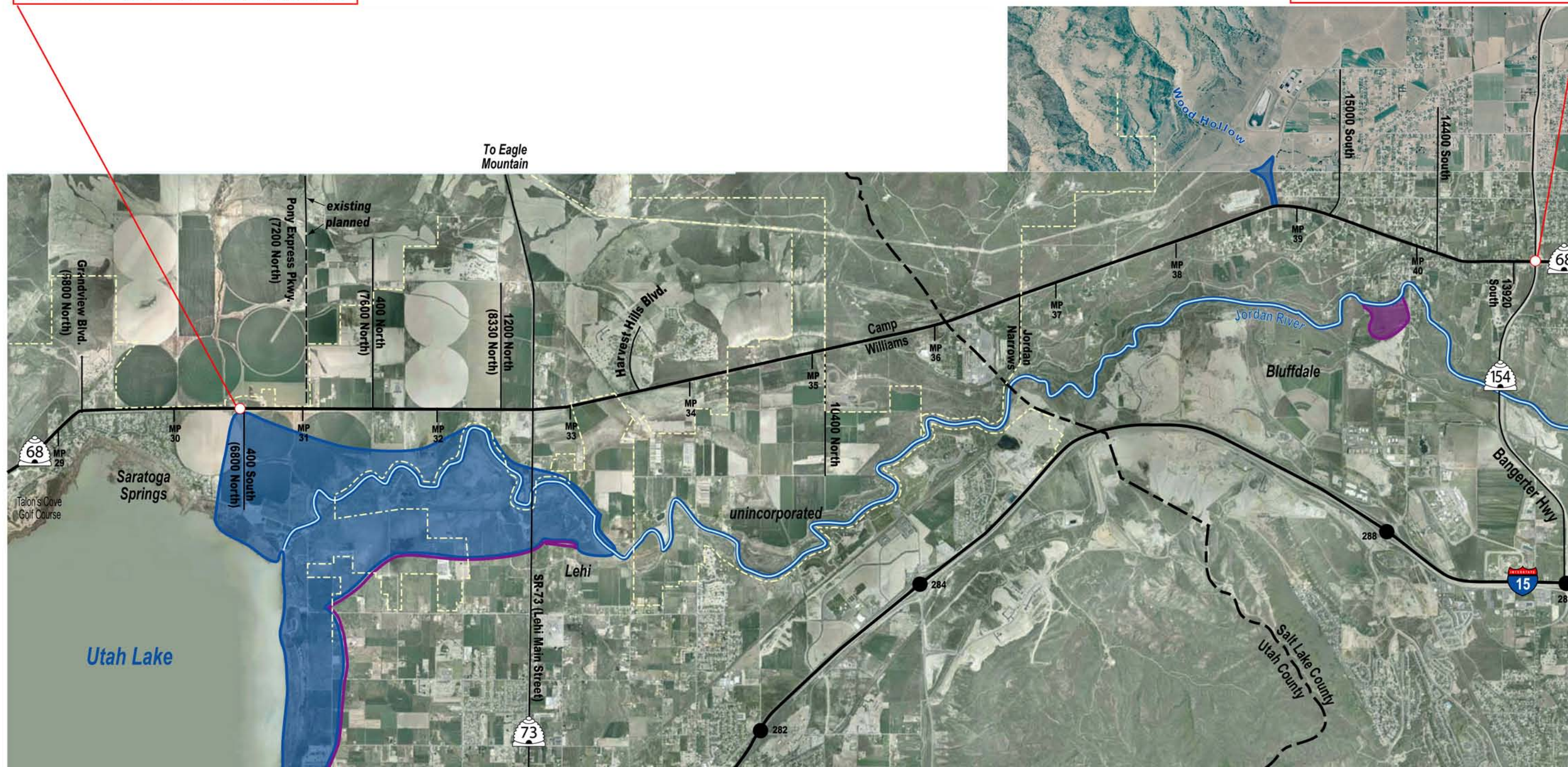
3.10.2.1 Surface Water

The project area lies within the Jordan River and Utah Lake Watersheds. The dividing line between these watersheds is the Utah and Salt Lake County boundary. No major streams originate on the western side of these drainage basins (within the project corridor). Surface waters near the project area include the Jordan River, which lies east of the Proposed Action; its distance varies, but it is generally more than 2,500 feet east of the project corridor. A number of canals and ditches crisscross the SR-68 corridor. Some drainages cross the corridor (Beef Hollow, Rose Creek), which are perennial in nature. The Jordan River (between the Jordan Narrows near the county border and Bluffdale) is listed on the 303(d) list for temperature violations. Utah Lake is also listed on the 303(d) list for exceeding total dissolved solids (TDS) and temperature limits. The analyses of TMDLs for these two water bodies are being prepared at this time.



Southern End of Proposed Project: Saratoga Springs, MP 30.5

Northern End of Proposed Project: Bluffdale, MP 40.8



--- Planned Roadways
--- Municipal Boundaries

Legend:

A = Areas subject to inundation by a base flood
 X500 = Areas subject to inundation by a 500 year flood

Figure 3-8
FEMA Floodplains

3.10.2.2 Groundwater

SR-68 lies outside the source protection zones for all public water supplies.

3.10.3 Environmental Consequences

3.10.3.1 No Build Alternative

Under the No Build Alternative, there will be no impact to water quality conditions for ground water and surface water.

3.10.3.2 Proposed Action

The Proposed Action includes a new roadway storm water drainage system that will comply with UDWQ standards. Therefore, there will be no impacts to surface water bodies. No decline in groundwater recharge is expected.

The proposed roadway will be widened by approximately 58 feet, and curbs and gutters will be installed on both sides for the length of the Proposed Action. The curbs and gutters will collect storm water runoff that will flow to detention basins; these have been identified on the plans included in Appendix A. Detention basins will be required at the end of pipe discharge points having flows equal to or greater than 5 cubic feet per second (cfs). Detention basins for this project will be designed to meet requirements of UDWQ. During the design phase of the project, UDOT will coordinate the location and design of the detention basin with the counties, cities, and UDWQ. Water leaving the detention basins will be cleaner than it was when coming off of the roadway. The suspended solids will be removed during the time the water is detained in the basins. The only exception to curbs and gutters conveying storm water to detention basins will be at the South Jordan Canal near 14400 South. Since this is one of the lowest points along SR-68, continued use of this canal as an outlet for roadway drainage is proposed.

3.10.4 Mitigation

There will be no adverse impacts to surface waters or groundwater. Detention basins as shown in the preliminary plans in Appendix A will be constructed as part of the Proposed Action.

3.11 WETLANDS AND WATERS OF THE U.S.

3.11.1 Regulatory Setting

Pursuant to Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (COE) has been given responsibility and authority to regulate the discharge of dredge or fill materials into "Waters of the United States," including wetlands. In addition, Executive Order 11990, Protection of Wetlands, and the U.S. Department of Transportation Order 56601.1a emphasize the preservation of the nation's wetland resources, including their functions and values.

If wetlands or "Waters of the U.S." are impacted by the Proposed Action, a Section 404 permit is required. This permit is administered through the COE and typically includes mitigation measures that must be met as part of the Proposed Action.

3.11.2 Affected Environment

A wetland delineation was conducted to identify and delineate wetlands and "Waters of the U.S." within the project corridor. Generally, the study corridor for the delineation was 300 feet wide, 150 feet on each side of the existing SR-68 center line. Several areas were wider to accommodate possible larger fill sections. The field survey was conducted on September 19 and 21, 2006. This survey included literature searches, aerial imagery interpretation, and field reconnaissance. National Wetland Inventory (NWI) maps and the NRCS soil survey maps were reviewed to determine the approximate location of potential wetland areas. The wetland delineation report has been approved by the COE. The approval letter dated March 29, 2007 is included Appendix B.

3.11.2.1 Wetlands

Along the project corridor, there is one jurisdictional wetland adjacent to the Provo Reservoir Canal near MP 35.5, just south of Camp Williams. No other wetlands (jurisdictional or non jurisdictional) were identified within the project corridor. This wetland is on the east side of SR-68 (see Sheet A-19 in Appendix A) and is shown in Figure 3-9, Waters of the U.S. and Wetlands. It is a shrub-scrub wetland approximately 0.17 acres in size.

Several of the canals, ditches, and perennial streams (Beef Hollow and Rose Creek) along the corridor support very narrow populations of hydrophytic vegetation along their banks. These are rooted below the normal high water mark of the channels. While they also possess hydric soils and hydrology indicative of wetlands, they are considered "Waters of the U.S." and not separate wetland areas.

3.11.2.2 Waters of the U.S.

Seven locations have been identified as "Waters of the U.S." along the project corridor. These are associated with irrigation ditches, canals, or perennial streams. Each exhibited at least two characteristics necessary to make an Ordinary High Water Mark determination (e.g., bed and bank, observed flow event, scour). "Waters of the U.S." identified in the project corridor have some connection to the Jordan River or Utah Lake and are regulated by COE. Each of these is discussed below:

Unnamed Irrigation Ditch

This ditch crosses under SR-68 just south of the southern termini of the project area. It is approximately four feet wide and has earthen banks. As it crosses under SR-68, the ditch splits and runs along both the north and south sides of 400 South in Saratoga Springs. This ditch is located at approximately MP 30.5 and is shown on page A-01 in Appendix A.

Utah Distributing Canal

This canal originates near Utah Lake, east of SR-68 and crosses under the roadway in two locations within the project corridor. The first segment crosses under SR-68 in Saratoga Springs near MP 33.5, just south of the Harvest Hills Boulevard intersection (see Figure A-12 in Appendix A). At this location the canal is about 10 feet wide and has earthen banks. The canal crosses under SR-68 via a culvert that is approximately 150 feet long. The second segment crosses under SR-68 in Bluffdale just north of MP 39 (see Figure A-33 in Appendix A). The canal is approximately 20 feet wide at this location and has earthen banks. The canal crosses via a concrete culvert that is approximately 55 feet long.

Provo Reservoir Canal

This canal crosses under SR-68 in two locations. It is also known as the Murdock Ditch and the Welby Jacobs Canal (in Bluffdale). The first segment crosses under SR-68 south of MP 35.5 in Utah County just south of Camp Williams (see Figure A-19 in Appendix A). At this location the canal is approximately 15 feet wide and its banks are earthen. The only wetland area within the project corridor is adjacent to this canal (east of SR-68), as shown in Figure 3-9. The canal crosses under the highway via a culvert that is approximately 75 feet long (crosses SR-68 at a skewed angle). The second segment crosses back under SR-68 in Bluffdale, just north of Camp Williams at MP 37 (see Figure A-25 in Appendix A). At this location the canal is approximately 15 feet wide and has earthen banks. It crosses SR-68 in a culvert that is approximately 75 feet long.

Beef Hollow

This perennial stream originates west of the SR-68 corridor within the Traverse Mountains on Camp Williams property. Beef Hollow crosses under SR-68 just north of MP 36 (see Figure A-22 in Appendix A) and is approximately 20 feet wide. It crosses SR-68 via a culvert that is about 250 feet long due to its depth below the roadway.

Utah and Salt Lake Canal

This canal crosses under SR-68 just north of MP 39.5 in Bluffdale (see Figure A-35 in Appendix A). The canal originates from the Jordan River. At the SR-68 crossing this canal is concrete lined and approximately 30 feet wide. It crosses under SR-68 via a box culvert about 60 feet long.

South Jordan Canal

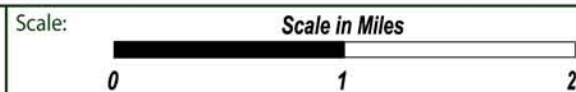
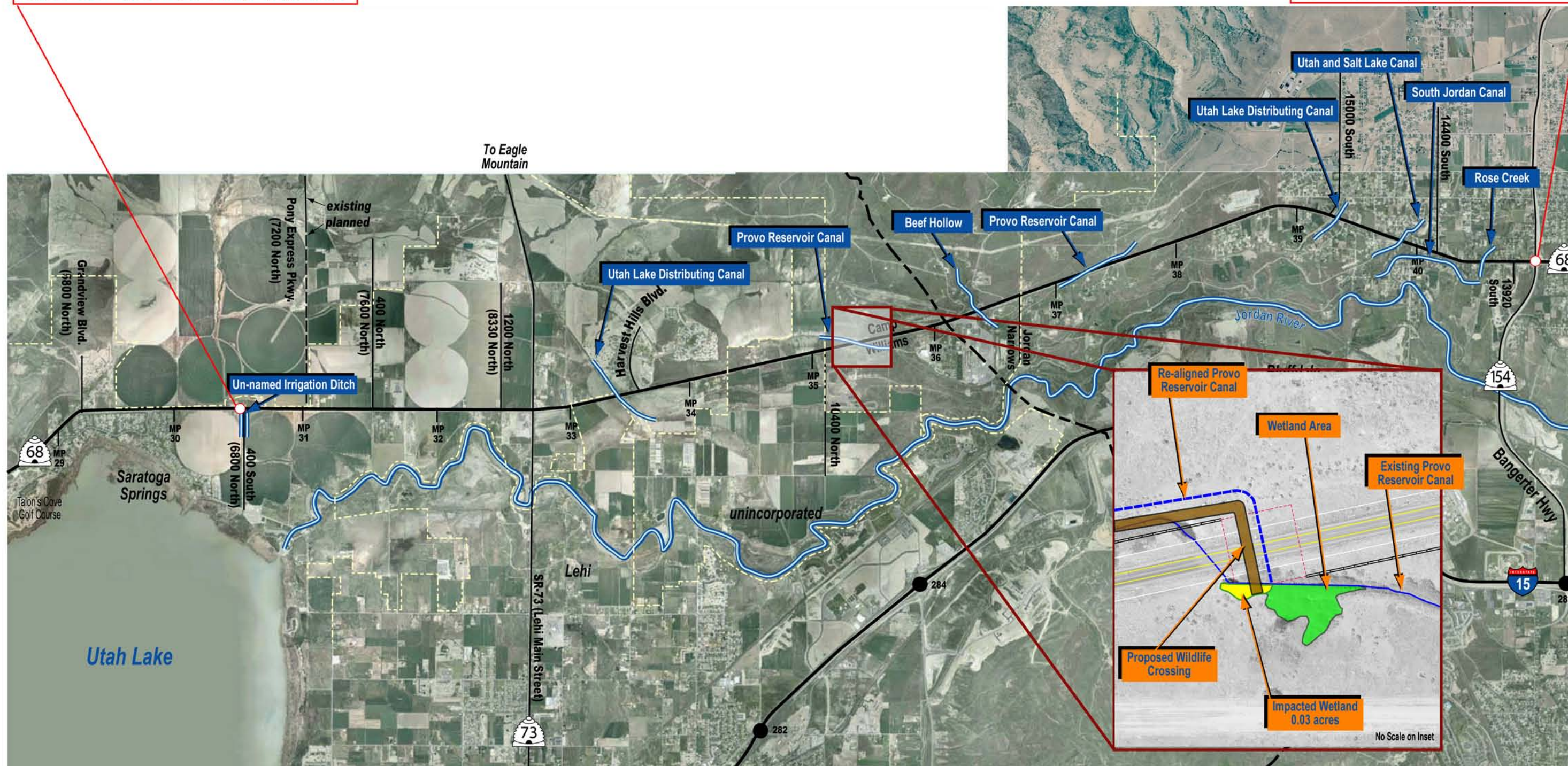
This canal parallels SR-68 for approximately 900 feet (between 14400 South and 14300 South) on the east side of the roadway; it never crosses under SR-68 (see Figures A-36 and A-37 in Appendix A). The South Jordan canal is approximately 20 feet wide and its banks are earthen. It originates from the Jordan River.

Rose Creek

This perennial stream is located at approximately MP 40.5 in Bluffdale (see Figure A-38 in Appendix A). Rose Creek is approximately 5 wide where it crosses under SR-68. This stream crosses under SR-68 via a culvert that is approximately 200 feet long due to its depth below the roadway.

Southern End of Proposed Project: Saratoga Springs, MP 30.5

Northern End of Proposed Project: Bluffdale, MP 40.8



Planned Roadways
Municipal Boundaries

Legend:

Waters of the U.S.
Wetland Area

Re-aligned Provo Reservoir Canal
Proposed Wildlife Crossing

Figure 3-9
Waters of the U.S. and Wetlands

3.11.3 Environmental Consequences

3.11.3.1 No Build Alternative

The No Build Alternative will not impact wetlands or “Waters of the U.S.”

3.11.3.2 Proposed Action

Wetlands

There is one jurisdictional wetland within the project corridor that is adjacent to the Provo Reservoir Canal, as illustrated in Figure 3-9. To minimize the impact area, the Proposed Action at this location includes a retaining wall. However, the proposed wildlife crossing #1 will impact approximately 0.03 acres of this wetland. The remaining area of this wetland will not be impacted by the Proposed Action.

Three wildlife crossings are proposed along the project corridor. These crossings will improve safety along SR-68 and enhance wildlife connectivity between the west side of the corridor and the Jordan River (main water source in the area). As discussed in Chapter 1, there are a high number of mule deer hit along the stretch of the corridor near Camp Williams. The number of wildlife killed and injured each year along SR-68 is also a concern raised by the UDWR (see letters in Appendix B). The three wildlife crossings have been placed in locations of heavy mule deer use and in coordination with the UDWR.

Waters of the U.S.

“Waters of the U.S.” include canals (Unnamed Irrigation Ditch, Utah Lake Distributing Canal, Provo Reservoir Canal, Utah and Salt Lake Canal, and the South Jordan Canal) and two ephemeral streams (Beef Hollow and Rose Creek) within the project corridor.

Unnamed Irrigation Ditch

The Proposed Action will not impact this irrigation ditch; it is just south of the construction limits for this project.

Utah Distributing Canal

This canal crosses under SR-68 in two locations:

- The first segment crosses under SR-68 in Saratoga Springs near MP 33.5, just south of the Harvest Hills Boulevard intersection. The Proposed Action will impact approximately 170 feet of this canal; 150 feet is already in a culvert under the existing SR-68.
- The second segment crosses under SR-68 in Bluffdale at MP 39. The existing concrete culvert is approximately 55 feet in length. The Proposed Action will impact another 115 feet of this section.

Provo Reservoir Canal

This canal crosses under SR-68 in two locations:

- The first segment crosses under SR-68 just south of MP 35.5. At this location, the Provo Reservoir Canal will be realigned to cross SR-68 within the proposed wildlife crossing #1 (Figure 3-9). Approximately 400 feet of the Provo Reservoir Canal will be realigned at this location (west side SR-68) to avoid impacting the wetlands on the east side of SR-68 and to accommodate

the wildlife crossing (see Figure A-19 in Appendix A).

- The second segment crosses back under SR-68 in Bluffdale at MP 37. Approximately 80 feet of the canal is in a culvert that crosses under SR-68. The Proposed Action will impact about 150 feet (not already in the culvert).

Beef Hollow

This perennial stream crosses under SR-68 just north of MP 36 and is located within Camp Williams. The Proposed Action will impact an additional 60 feet of this stream; approximately 240 feet already have been placed in a culvert under SR-68 due to its depth below the roadway.

Utah and Salt Lake Canal

This canal crosses just north of MP 39.5 in Bluffdale. The Proposed Action will impact an additional 50 linear feet; approximately 110 feet already have been placed in a culvert under SR-68.

South Jordan Canal

This canal parallels SR-68 for approximately 900 feet. The canal will be placed in a culvert or piped for approximately 850 feet because of the widening of SR-68. The dimensions of the new culvert will be determined in consultation with the South Jordan Canal Company during the final design phase of this project.

Rose Creek

Currently, the Proposed Action includes construction of retaining walls at this location to minimize impacts to Rose Creek and to reduce fill slopes. Therefore, there will be no impacts at this location.

3.11.4 Mitigation

3.11.4.1 Wetlands

Less than 0.03 acre (1,300 square feet) of jurisdictional wetlands will be impacted by the Proposed Action. Avoidance of these wetlands was considered during the preliminary design but because of the proposed wildlife crossing it is not reasonable. The wildlife location was determined in consultation with the Utah Division of Wildlife Resources, officials at Camp Williams, and UDOT.

The wetland area impacts have been minimized. A retaining wall will be constructed on the east side of SR-68 at this location to minimize the acreage of impacts to the wetland area. Also, the Provo Reservoir Canal requires realignment which will be constructed on the west side of SR-68 away from the wetland area.

3.11.4.2 Waters of the U.S.

The "Waters of the U.S." within the project corridor are associated with canals, except for those at Beef Hollow and Rose Creek, which are perennial streams. All "Waters of the U.S." that are crossed by the Proposed Action will be reconstructed to their original dimensions. Also, their banks will be revegetated as soon as possible after their reconstruction to minimize erosion. The Contractor will be required to abide by UDOT Standard Specification 01355 – Environmental Protection and apply the BMPs listed when working near or in any live waters including canals.

A Section 404 Permit will be obtained as part of the design phase of this project and prior to impacting the wetland area and the "Waters of the U.S." As part of the Section 404 permitting process, appropriate mitigation will be agreed upon between FHWA, UDOT, and the COE. It is anticipated that Nationwide Permit #14 – Linear Transportation Projects applies to this project since the wetland impact acreage is minimal and within the limits allowed for this permit.

At the time this document was prepared, mitigation type, ratio, and location of any wetland mitigation have not been determined. Coordination between UDOT and the COE is ongoing.

3.12 WILDLIFE AND UTAH SENSITIVE SPECIES

3.12.1 Regulatory Setting

The Utah Department of Wildlife Resources (UDWR) maintains a list of wildlife Conservation Agreement Species and Species of Concern (Utah Administrative Rule R657-48). The restricted distributions, specialized habitat requirements, and population pressures (human induced and natural) of wildlife are contributing factors in their potential for federal listing.

3.12.2 Affected Environment

A letter from the Utah Division of Wildlife Resources was received on September 15, 2006 regarding species of special concern. This letter is included in Appendix B.

Water bodies within close proximity to SR-68 contribute to habitat and migration corridors for numerous wildlife species. The nearest riparian habitat relative to this project occurs within the Jordan River corridor. Small mammals often have special habitat needs. Areas with the highest concentrations and diversity of these species are generally associated with riparian areas. In 1994, riparian areas (the Jordan River corridor) showed the highest avian diversity.

Numerous studies have been conducted in the general vicinity of SR-68 within Camp Williams, which encompasses approximately 25,000 acres. These studies are applicable to this EA where conditions along SR-68 are similar to those within Camp Williams (i.e., primarily undeveloped open land). Where development is rapidly transforming open land, habitat values to wildlife are diminishing.

3.12.2.1 Flora and Fauna Habitat Support Function of Wetlands

The wetland area adjacent to the Provo Reservoir Canal is hydrologically supported by subsurface leakage from the canal. Sufficient moisture is present to sustain a colony of narrowleaf willow (*Salix exigua*), an obligate wetland plant that provides moderate to high wildlife habitat function. The functionality of a wetland can be limited by non-native or invasive plants, and few are present here. The wetland adds habitat diversity to the surrounding xeric grassland plant community. Vegetation in close proximity to the wetland provides foraging and potential nesting habitat for birds. The wetland is also part of a longer riparian zone and may provide shelter for migrating wildlife. However, close proximity to the project corridor reduces the overall functionality of this wetland as a result of habitat fragmentation, noise, and wildlife mortality.

3.12.2.2 Mammals

Mule deer (*Odocoileus hemionus*) and mountain lion (Cougar) (*Felis concolor*) occupy most ecosystems in Utah, including those along SR-68. The size and condition of the animals usually depend on the quantity and quality of their habitat. The largest herd observed near the project corridor occurs on Camp Williams and surrounding property. Currently, the deer reach the Jordan River by crossing SR-68 from the west. Given the proximity of deer habitat areas to the roadway, the movement of animals is likely to occur across SR-68 year-round. Most deer crossings occur between MP 35 and 40, and many deer are hit by cars and killed in this area. Animal-related crash statistics are shown in Figure 1-5, Crashes with Animals, Years 2001-2005 in Chapter 1. A comment received from the UDWR stating their concern for the number of wildlife killed along the project corridor (see comment in Appendix B). The UDWR is supportive of the Proposed Action and the construction of wildlife crossings.

A 1993-94 live-trapping survey on Camp Williams property identified 12 small mammal species. Scent post surveys have been conducted at Camp Williams from 2003 to 2005. These posts were visited by bobcat, cougar, coyote, gray fox, domestic cat, and rodent species.

3.12.2.3 Birds

The Utah National Guard has conducted bird species inventory surveys at Camp Williams annually since 1993. Overall, sagebrush habitats have had the highest species diversity for birds (Utah Army National Guard, unpublished data).

3.12.2.4 Reptiles and Amphibians

Reptiles and amphibians often have special habitat needs. Eleven reptile and amphibian species have the potential to occur within the project area. Areas with the highest concentrations and diversity of these species are generally associated with riparian areas. In a 1993-94 herptofauna (reptiles and amphibians) survey at Camp Williams, the Jordan River riparian habitat had the highest diversity of species.

3.12.2.5 Fish

No fish species or fish habitats were identified within the project area.

3.12.2.6 Utah Species of Concern

The Utah Species of Concern and Conservation Agreement Species lists 32 Sensitive Species that may occur or have potentially suitable habitat in Salt Lake and Utah Counties. Of these, five bird species have the potential to occur within the project study area. These species are as follows:

- American white pelican (*Pelecanus erythrorhynchos*);
- Bobolink (*Dolichonyx oryzivorus*);
- Burrowing owl (*Athene cunicularia*);
- Long-billed curlew (*Numenius americanus*); and
- Short-eared owl (*Asio flammeus*).

Four species, all birds, on the State Sensitive Wildlife Species list have the potential to occur within the project area:

- Bobolink (*Dolichonyx oryzivorus*);
- Burrowing owl (*Athene cunicularia*);
- Long-billed curlew (*Numenius americanus*); and
- Short-eared owl (*Asio flammeus*).

3.12.3 Environmental Consequences

3.12.3.1 No Build Alternative

There will be no direct impact on wildlife or wildlife habitat under the No Build Alternative. Without wildlife crossings, the number of wildlife killed on the roadway will likely increase as traffic volumes increase.

3.12.3.2 Proposed Action

The Proposed Action will not remove or impact large tracts of land or wildlife habitat.

Mammals

The proposed wildlife crossings that will be constructed as part of the Proposed Action will have a beneficial impact on the deer population. It will allow for a potentially safer crossing for deer along the project corridor to access the Jordan River. As part of these crossings, wildlife fencing will be constructed to help channel wildlife to use these crossings.

Reptiles and Amphibians

There are no riparian habitat areas in the project corridor where reptiles and amphibians tend to live. Therefore, no impacts to these species are anticipated.

Birds

Bird breeding, nesting, and foraging habitat occurs within the project area. It is likely that the species listed above currently inhabit, forage, and nest in the area. However, none of the records regarding bird behavior conclusively show that the Proposed Action will not allow these activities to occur. Habitat types for the four species on the State Sensitive Species list with the potential for occurring in Salt Lake and Utah Counties will not be modified in amount or quality from current conditions.

3.12.4 Mitigation

SR-68 is not impacting the wildlife habitat area in Camp Williams, and the Proposed Action will not create any new impacts to wildlife habitat; therefore, no mitigation is required. To increase safety and to help minimize the number of vehicle-animal crashes, three wildlife crossings and associated wildlife fencing will be constructed as part of the Proposed Action.

3.13 THREATENED AND ENDANGERED SPECIES

3.13.1 Regulatory Setting

A 1973 federal law, the Endangered Species Act (ESA), amended in 1978 and 1982, was enacted to protect plant and animal species from extinction. The Endangered Species Act (16 USC 1531) for Federally Listed Species provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found.

The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 701-715s) establishes protection for migratory birds and their parts (including eggs, nests, and feathers) from hunting, capture, or sale. Executive Order 13186, signed on January 10, 2001, directs federal actions that are likely to have a measurable negative effect on migratory birds to undertake a number of actions in support of the MBTA. One of these actions entails that federal agencies ensure that environmental analyses required by NEPA evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern.

The Bald Eagle Protection Act of 1940 (16 USC 5A §668) prohibits the take, possession, sale, purchase, barter, or offer to sell, purchase, or barter, export or import of the bald eagle "at any time or in any manner." The Fish and Wildlife Coordination Act of 1958 (16 USC 661-666c as amended) provides for conservation and management of fish and wildlife by encouraging cooperation between the U.S. Fish and Wildlife Service and other federal, state, public, and private agencies.

3.13.2 Affected Environment

Bald eagles (*Haliaeetus leucocephalus*) are the only threatened or endangered species with the potential to occur within the project vicinity. In Utah, bald eagles primarily nest in cottonwood-dominated riparian areas. Pairs nest in large trees or snags with sturdy branches in areas with adequate food (fish and carrion) and access to open water. Two documented daytime perching sites occur within a 1/2 mile raptor zone of influence analyzed for the Proposed Action. These areas have supported overnight roosts within the past decade but are no longer used as night roosts because of encroaching development. Bald eagle winter roosting sites probably occur in riparian vegetation along the Jordan River, but there is no data to support this claim.

3.13.3 Environmental Consequences

UDOT has reviewed the UDWR and U.S. Fish and Wildlife Service databases, which indicated that no federally listed, endangered, or candidate species or any critical habitat will be affected by the Proposed Action (see UDOT letter in Appendix B dated February 5, 2007). The Proposed Action will not remove large cottonwood trees near water sources that may be considered critical habitat for the bald eagle. The only open water sources are the irrigation canals and ditches and two perennial streams (Beef Hollow and Rose Creek). However, as discussed in Section 3.12 – Wildlife and Utah Sensitive Species, there are no fish within the water sources along the project corridor.

3.13.3.1 No Build Alternative

The No Build Alternative will have no impact on wildlife or wildlife habitat, including perching sites for bald eagles.

3.13.3.2 Proposed Action

Of the six federally-listed threatened, endangered, and candidate wildlife species that have the potential to occur in Salt Lake and Utah Counties, only the bald eagle (*Haliaeetus leucocephalus*) has the potential to occur within the project area. Bald eagle perching sites and probable winter roosting sites along the Jordan River riparian corridor would not be affected by the Proposed Action. Paul West, UDOT Wildlife/Wetlands Biologist, has provided a "No Effect" memorandum (included in Appendix B).

3.13.4 Mitigation

There will be no impacts to threatened, endangered, and candidate wildlife species; therefore, no mitigation is required.

3.14 INVASIVE SPECIES

3.14.1 Regulatory Setting

Laws and regulations concerning noxious weeds exist at both the federal and state levels, and a number of agencies maintain lists of specific noxious weed species. Generally, federal weed laws and regulations are geared toward preventing unwanted plants from entering the U.S., while state laws and regulations are aimed more at the control and removal of noxious weeds.

In recognition of the economic and ecological impacts of weeds, the State of Utah adopted the Utah Noxious Weed Act (Utah Code, Title 04, Chapter 17), which was recently updated on June 15, 2006. The act requires landowners to manage the state-listed noxious weeds if they are likely to damage neighboring lands. The act stipulates that each county and municipality in Utah must adopt a noxious weed management plan for its jurisdiction. Also, they must appoint an advisory board to develop the weed management plan and to identify the noxious weed species in their respective areas. Landowners are responsible for controlling both the state and county listed species.

3.14.2 Affected Environment

The project area is generally classified as a Great Basin – Cold Desert Ecosystem. The field survey of the project area conducted September 19, 2006, identified two plant species recognized by the State of Utah as noxious weeds: musk thistle (*Carduus nutans*) and Scotch thistle (*Onopordum acanthium*). Other problem invasive weed species include common reed (*Phragmites australis*), saltcedar (*Tamarisk ramosissima*), and cheatgrass (*Bromus tectorum*).

3.14.3 Environmental Consequences

3.14.3.1 No Build Alternative

The No Build Alternative will not generate additional areas for noxious weeds to spread. No impacts will result from the No Build Alternative.

3.14.3.2 Proposed Action

The project area consists largely of roadsides currently infested with noxious and invasive weeds. There will be no long-term impacts associated with the spread of noxious weeds.

To minimize temporary and long-term impacts UDOT will require the Contractor to use Special Provision Section 02924S and 02924 for invasive weed control.

3.14.4 Mitigation

The Contractor will be required to follow UDOT's Special Provision 02924S – Invasive Weed Control, during construction activities. The BMPs listed in this specification include washing equipment (i.e. earth movers, graders) prior to their use and applying an herbicide along the project corridor to control the spreading of these noxious species. Also, disturbed areas will be revegetated with native, non-invasive species as soon as feasible.

3.15 HISTORIC AND ARCHAEOLOGICAL RESOURCES

3.15.1 Regulatory Setting

The National Historic Preservation Act (NHPA) sets the national policy and procedures regarding "historic properties"—that is, districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to consider the effects of their undertakings on such properties, following regulations issued by the Advisory Council on Historic Preservation (ACHP) (36 CFR 800). Other federal legislation includes Section 4(f) (49 USC 303) of the Department of Transportation (DOT) Act of 1966 (see Chapter 4 of this EA).

3.15.2 Affected Environment

To identify cultural resources within the project study area a combination of on-the-ground field inspection, literature review, and consultation was undertaken. The field inspections consisted of both intensive and reconnaissance-level pedestrian archaeological surveys and a selective reconnaissance-level survey for historic properties (historic architectural resources). The findings have been included in a Cultural Resources Inventory, October 2006.

The consultation component of the cultural resource study included written and verbal correspondence with interested parties, including representatives of local historical societies, certified local governments, and planning commissions, as well as the following four Native American Tribes: Northwestern Band of Shoshone Nation, Shoshone-Bannock Tribes, Skull Valley Band of the Goshute Indians, and the Uintah and Ouray Ute Indian Tribe. A copy of the letter sent to these tribes is included in Appendix B. Follow-up phone calls and emails were sent to each of these tribes. These Native American Tribes did not have any concerns or identify any traditional cultural or religious sites within the project study area.

The Utah Geological Survey (UGS) was also consulted regarding paleontological resources (see UGS letter in Appendix B).

3.15.2.1 Area of Potential Effects

Section 106 of the NHPA requires the definition of an Area of Potential Effects (APE). The APE consisted of a linear corridor measuring approximately 17.1 miles long and incorporated a total of 641.5 acres. The project corridor studied for the Cultural Resources Inventory began at Pelican Point in Saratoga Springs and ended at Bangerter Highway in Bluffdale. The majority of the APE measured 300 feet wide, centered on the existing SR-68 centerline. However, a few wider areas were surveyed to accommodate the planned

improvements. As discussed in the previous chapters, the project corridor extends 10.3 miles from the future Pony Express Parkway intersection to Bangerter Highway.

3.15.2.2 Archaeological Resources

Once identified, each cultural resource within the APE was evaluated by the NRHP criteria. The criterion of the NRHP indicates that a cultural resource site or building may be considered eligible for inclusion if it meets the following criteria:

- Is associated with events that have made a significant contribution to the broad patterns of our history;
- Is associated with the lives of persons significant in our past;
- Embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; or
- Yields, or may be likely to yield, information important in prehistory or history.

Archaeological resources considered potentially eligible under one of the four criteria must also be evaluated for integrity of location, design, setting, materials, workmanship, feeling, and association. The resources found within the project corridor are listed in Table 3-7 and are shown in Figure 3-10, Cultural Resources.

TABLE 3-7, ARCHAEOLOGICAL RESOURCES

Site Number	Site Name (if applicable)	Site Type	NRHP Eligibility
42UT944	Gardner Canal (two segments, both in Utah County)	Historic canal	Criterion A
42UT945	Saratoga Canal	Historic canal	Criterion A
42UT946 / 42SL286	Utah Lake Distributing Canal (two segments – one in Utah County and the other in Salt Lake County)	Historic canal	Criterion A
42UT947 / 42SL287	Provo Reservoir Canal/Murdock Ditch (two segments – one in Utah County and the other in Salt Lake County)	Historic canal	Criterion A
42UT1496	N/A	Prehistoric lithic scatter*	Criterion D
42SL295	Utah and Salt Lake Canal	Historic canal	Criterion A
42SL291	South Jordan Canal	Historic canal	Criterion A
Historic Bridge	South Jordan Canal Bridge	Historic bridge	Criterion C

*Not shown on Figure 3-10

3.15.2.3 Historic Properties

Within the State of Utah, historic resources are also evaluated using a rating system established by the State Historic Preservation Office (SHPO). In addition, each site is evaluated based on the NRHP criteria listed in the previous section. The SHPO rating system allows for the assignment of one of four ratings to buildings and structures based upon the degree to which they retain historical and architectural integrity:

- Eligible: built within the historic period and retains integrity; excellent example of a style or type; unaltered or only minor alterations or additions;
- Eligible: built within the historic period and retains integrity; good example of a style or type, but not as well-preserved or well-executed as "A" buildings; more substantial alterations or additions than "A" buildings, though overall integrity is retained;
- Ineligible: built during the historic period but has had major alterations or additions; no longer retains integrity; and
- Ineligible/out-of-period: built after the historic period.

Table 3-8 summarizes the historic properties within the SR-68 APE that are considered eligible for inclusion in the NRHP. The complete list of NRHP eligible and not eligible is included in the Determination of Eligibility found in Appendix B. Additional details about each property, including specific information about modifications to the original structures, are contained in the Cultural Resources Report (Stokes, et al., 2006). The locations of the historic properties are shown in Figure 3-10.

TABLE 3-8, HISTORIC PROPERTIES

Address	Approx. Date Built	Description	Eligibility (NRHP and SHPO)
8251 So. SR-68, Saratoga Springs	1960	Ranch/Rambler style building of Ranch/Rambler form	NRHP C SHPO B
14551 So. Redwood Road, Bluffdale	1958	Ranch/Rambler residence of vernacular Ranch/Rambler style	NRHP C SHPO B
14505 So. Redwood Road, Bluffdale	1955	WWII Era Cottage of general Post-WWII style	NRHP C SHPO B
14284 So. Redwood Road, Bluffdale	1952	Vernacular residence of general Post-WWII type and style	NRHP C SHPO A
14214 So. Redwood Road, Bluffdale	1950/1910	Vernacular residence of indeterminate type and style; historical outbuilding/shop associated with property is unaltered and worthy of consideration on its own	Residence is Not Eligible Outbuilding/shop is eligible. NRHP C SHPO A
14186 So. Redwood Road, Bluffdale	1955	Vernacular residence of general Post-WWII type and style	NRHP C SHPO B
14166 So. Redwood Road, Bluffdale	1913	Bungalow residence of Arts & Crafts and Greek Revival style	NRHP C SHPO B
14140 So. Redwood Road, Bluffdale	1952	Early Ranch/Rambler residence of Early Ranch/Rambler style	NRHP C SHPO B
14129 So. Redwood Road, Bluffdale	1951	WWII Era Cottage of general Post-WWII style; one-story single family dwelling	NRHP C SHPO B
14100 So. Redwood Road, Bluffdale	1952	Early Ranch/Rambler residence of Early Ranch/Rambler style	NRHP C SHPO B

TABLE 3-8, HISTORIC PROPERTIES

Address	Approx. Date Built	Description	Eligibility (NRHP and SHPO)
14041 So. Redwood Road, Bluffdale	1953	WWII Era Cottage of general Post-WWII style	NRHP C SHPO B
1863 W 14100 So. (14024 So. Redwood Rd.), Bluffdale	1927	Vernacular residence of general early 20th Century style	NRHP C SHPO B
14012 So. Redwood Road, Bluffdale	1901	Central Block with Projecting Bays residence of Victorian Eclectic style	NRHP C SHPO A
13880 So. Redwood Road, Bluffdale	1959	Ranch/Rambler residence of Ranch/Rambler	NRHP C SHPO A

* Redwood Road is also known as Camp Williams Road and 1700 West

3.15.2.4 Multiple Property Submission

The SR-68 project corridor passes through a potential NRHP Multiple Property Submission (MPS) resource area in Utah County. This MPS is entitled *The Historical Agricultural Landscape of Northern Utah County* and was proposed as part the Mountain View Corridor project. The MPS includes historic farmsteads, ditches, canals and other water ways, landscape, and railroad tracks that may contribute to the overall historic setting of Northern Utah County. The rough boundaries for the MPS extend south from the Utah/Salt Lake County line to the Pleasant Grove city boundaries east to I-15 and west to the foothills above Saratoga Springs. The MPS has been accepted by the SHPO; but at the present time, it has not been submitted to the *Keeper of the Register*, the arbiter of the NRHP. Since it has been approved by SHPO for inclusion into the NRHP, the MPS will be considered as a historic property for the purpose of this section of the EA. The MPS incorporates all of the criteria of the NRHP and is an integrated entity that includes all types of historical resources associated with the agricultural history and landscape development of the area for which the MPS was defined. The historic resources adjacent to the SR-68 project corridor that are part of this MPS are four canals (Gardner Canal, Saratoga Canal, Utah Lake Distributing Canal, and the Provo Reservoir Canal/Murdock Ditch) and 11 historic ditch segments (the ditch segments are shown in Appendix A).

3.15.2.5 Historic Boundary Definition for Historic Properties

For most historic properties along the project corridor, the historic boundary is the legal parcel. For the historic structure at 14214 South Redwood Road, the historic boundary is the footprint of the building, not the legal parcel boundary. The definition of historic boundary is based on two National Register Bulletins (16A and 21). National Register Bulletin 16A, page 56, suggests that for urban and suburban properties, the legally recorded parcel number or lot lines are appropriate when those parcels retain their historic boundaries and integrity. National Register Bulletin 21, page 3, states, "Boundaries should include surrounding land that contributes to the significance of the resources by functioning as the setting...For example, do not limit the property to the footprint of the building, but include its yard or grounds..." The tax parcels for many historic properties in the Salt Lake Valley and in northern Utah County extend to the center of the roadway. However, the portion of the private property under existing transportation facilities (e.g., under sidewalks, parkstrips,

curb and gutter, or roadway) has become public space and no longer retains the characteristics that qualify a given property for eligibility for the NRHP. Therefore, the boundary is generally drawn behind these features, usually behind the sidewalk.

3.15.2.6 Paleontological Resources

In consultation with the Utah Geological Survey and review of relevant paleontological literature, no paleontological localities have been previously documented in the project area (see letter in Appendix B). No paleontological resources were identified during field inspections for the project.

3.15.2.7 Determination of Eligibility

A Determination of Eligibility (DOE) has been prepared by FHWA and UDOT. The purpose of DOE is to document the findings of the Cultural Resources Inventory and to have SHPO concur with these findings. The Determination of Eligibility for this project was signed by SHPO on November 2, 2006; a copy is included in Appendix B.

3.15.3 Environmental Consequences

The impacts to historic properties are categorized by criteria established by Section 106 (36 CFR 800). These include *No Historic Properties Effectuated (No Effect)*, *No Adverse Effect*, or *Adverse Effect* (36 CFR 800.16i and 36 CFR 800.5(a)).

3.15.3.1 Finding of Effect

The types of impacts (*No Historic Properties Affected*, *No Adverse Effect* or *Adverse Effect*) are determined by FHWA and UDOT followed by concurrence from SHPO. These are documented in a Finding of Effect (FOE) was approved by SHPO on January 19, 2007. A copy of the FOE is included in Appendix B.

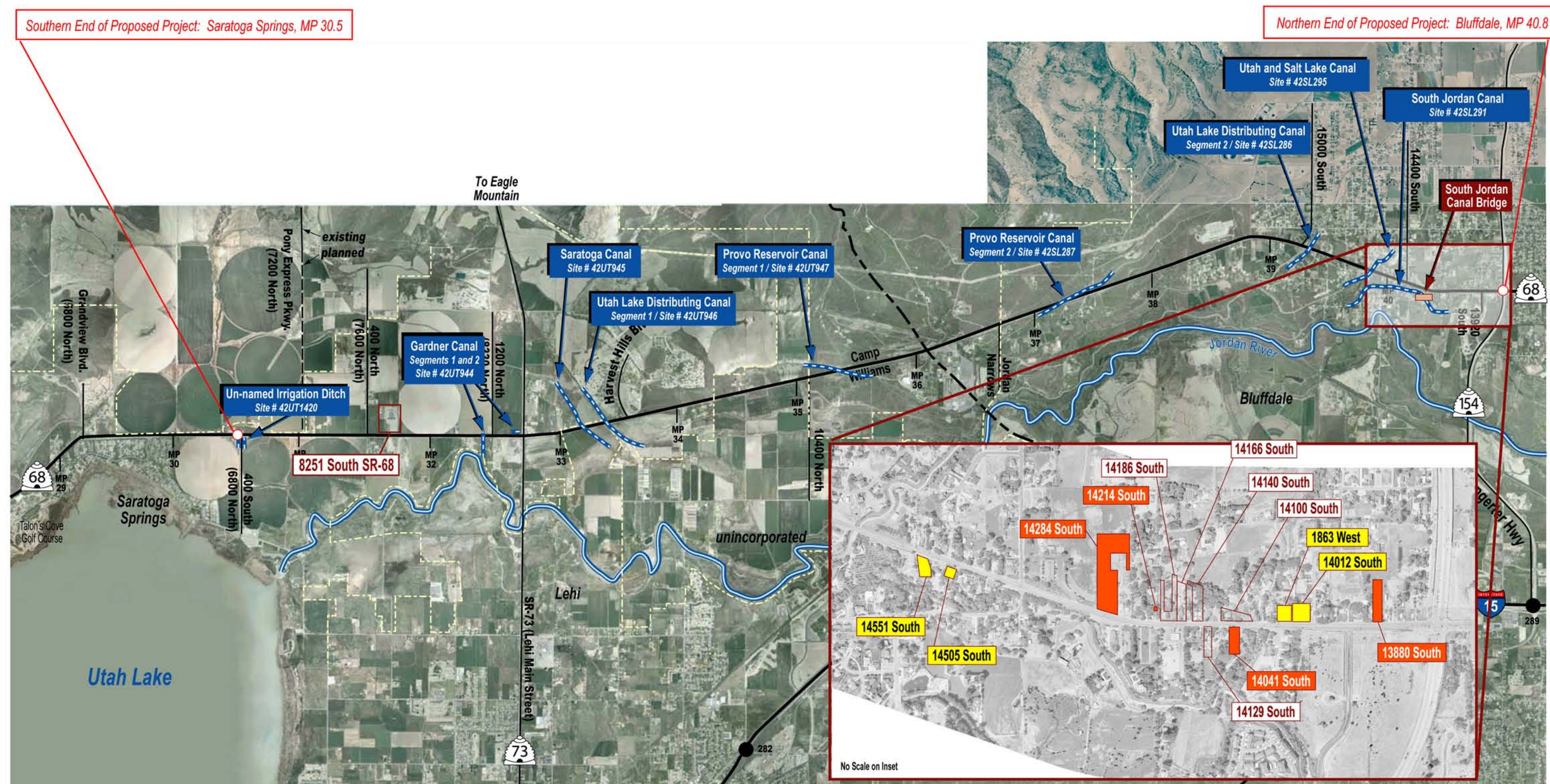
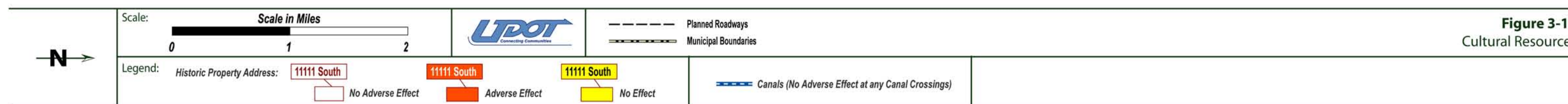


Figure 3-10
Cultural Resources



3.15.3.2 No Build Alternative

The No Build Alternative will not impact historic or archeological resources within the project corridor.

3.15.3.3 Proposed Action

Historic properties and archaeological sites that are impacted by the Proposed Action are those that have either a finding of *No Adverse Effect* (small strip of land) or *Adverse Effect* (complete parcel acquisition or proximity damages). A property with a finding of *No Historic Properties Affected (No Effect)* is not impacted by the project. Only those resources identified as eligible for the NRHP (see Tables 3-7 and 3-8) are addressed in this impacts assessment. Table 3-9 summarizes the Proposed Action impacts on archaeological resources within the SR-68 APE.

TABLE 3-9, ARCHAEOLOGICAL SITES

Archaeological Site Number	NRHP Type of Effect (or impact)	Comments
42UT944 – Gardner Canal (two segments, both in Utah County)	No Adverse Effect	<u>Segment 1:</u> Approximately 40 linear feet of the canal will be impacted. <u>Segment 2:</u> Approximately 25 linear feet of the canal will be impacted.
42UT945 – Saratoga Canal	No Adverse Effect	Approximately 150 linear feet of the canal will be impacted.
42UT946 / 42SL286 Utah Lake Distributing Canal	No Adverse Effect	<u>Segment 1:</u> Less than 20 linear feet of the canal will be impacted. <u>Segment 2:</u> Approximately 100 linear feet of the canal will be impacted.
42UT947 / 42SL287 – Provo Reservoir Canal/ Murdock Ditch	No Adverse Effect	<u>Segment 1:</u> Approximately 45 linear feet of the canal will be impacted. Approximately 400 feet of this canal will be realigned on the west side of SR-68. <u>Segment 2:</u> Less than 45 linear feet of the canal will be impacted.
42UT1496 – (prehistoric lithic scatter)	No Effect	No impact
42SL295 – Utah and Salt Lake Canal	No Adverse Effect	Approximately 40 linear feet of the canal will be impacted.
42SL291 – South Jordan Canal	No Adverse Effect	Approximately 850 linear feet of the canal will be piped, but the overall historical integrity of the site will not be altered.
Historic Bridge (over the South Jordan Canal)	No Effect	No impact

Table 3-10, found on the following page, summarizes the impacts to historic properties within the SR-68 APE.



TABLE 3-10, HISTORIC PROPERTIES

Historic Property Address	NRHP Type of Effect (or impact)	Comments
8251 So. SR-68, Saratoga Springs	No Adverse Effect	Strip take. Partial right-of-way acquisition required. Alignment avoids house and contributing features.
14551 So. Redwood Road, Bluffdale	No Effect	No impact
14505 So. Redwood Road, Bluffdale	No Effect	No impact
14284 So. Redwood Road, Bluffdale	Adverse Effect	Complete take of property. Alignment avoids house but eliminates access. Access cannot be restored because of the roadway geometry.
14214 So. Redwood Road, Bluffdale	Adverse Effect	Complete take of property. Alignment will be close to eligible historical outbuilding. The ineligible historical residence associated with the property will be removed, thereby changing the setting, feeling, and association of the eligible outbuilding.
14186 So. Redwood Road, Bluffdale	No Adverse Effect	Strip take and partial right-of-way acquisition. Alignment avoids house and contributing features.
14166 So. Redwood Road, Bluffdale	No Adverse Effect	Strip take and partial right-of-way acquisition. Alignment avoids house and contributing features.
14140 So. Redwood Road, Bluffdale	No Adverse Effect	Strip take and partial right-of-way acquisition. Alignment avoids house and contributing features.
14129 So. Redwood Road, Bluffdale	No Adverse Effect	Strip take and partial right-of-way acquisition. Alignment avoids house and contributing features.
14100 So. Redwood Road, Bluffdale	No Adverse Effect	Strip take and partial right-of-way acquisition. Alignment avoids house and contributing features.
14041 So. Redwood Road, Bluffdale	Adverse Effect	Complete take of property. Fill will either impact or be extremely close to the eligible house. The sidewalk will be less than 15 feet from the house.
1863 W 14100 So. (14024 So. Redwood Rd.), Bluffdale	No Effect	No impact
14012 So. Redwood Road, Bluffdale	No Effect	No impact
13880 So. Redwood Road, Bluffdale	Adverse Effect	Partial right-of-way acquisition. Alignment avoids house but impacts contributing historical ditch that extends between SR-68 and historic house.

3.15.3.4 Multiple Property Submission

Within the area of the MPS, the Proposed Action will impact three historical ditches and four canal sites that are considered contributing elements of the MPS. The canals are the Gardner Canal, Saratoga Canal, Utah Lake Distributing Canal, and Provo Reservoir Canal/Murdock Ditch, and all are considered eligible for the NRHP in their own right. Impacts to each of the individual canals will result in No Adverse Effect under Section 106 as agreed by SHPO. The impacts to the historic ditches include the use of 400 linear feet of Ditch 8, 2,700 linear feet of Ditch 4, and 2,600 feet of Ditch 3. Although the Proposed Action will impact some of these documented ditch segments, the majority of the ditch network will remain intact and will convey the agricultural landscape characteristics for which the MPS was proposed. The impacts to these ditch segments results in a *No Adverse Effect* to the overall MPS under Section 106.

3.15.4 Mitigation

Efforts to avoid or minimize impacts to archaeological and historic properties were incorporated into the Proposed Action. These efforts include horizontal shifts of the roadway design and the placement of retaining walls where appropriate to constrain impacts from the roadway design. Reductions of the roadway cross-section and location alternatives (i.e., upgrading roads other than SR-68) were also considered. Detailed information about the avoidance and minimization measures considered for the SR-68 Project is provided in Chapter 4 of this EA.

As a result of the avoidance and minimization measures considered, the vast majority of historic properties within the APE for the Proposed Action will either be avoided or will be subject to such minimal impacts as to not alter the eligibility of those properties for the NRHP. However, four historic properties (highlighted in Table 3-7) cannot be avoided, and minimization measures cannot reduce the impacts to less-than-adverse levels. For these properties, mitigation of the adverse impacts must be considered. UDOT is currently consulting with the SHPO and other interested parties to determine the appropriate mitigation measures to be implemented.

A Memorandum of Agreement will be executed between UDOT, FHWA, and SHPO. The MOA will stipulate how the adverse impacts to historic properties will be resolved prior to the construction of the Proposed Action. The Draft MOA includes the documentation of the historic resources adversely impacted through the completion of an Intensive Level Survey (ILS). An ILS will be completed for the four historic properties adversely impacted. The ILS will include the following:

- Photographs that show such attributes as the interior, exterior, and streetscape. This will include an adequate number of professional quality black and white photographs;
- Research material including a copy and a negative of the legal historic tax card (if available); and
- Repository of all materials with the Division of State History, Historic Preservation Office to be placed on file.

A copy of the Draft MOA is included in Appendix B.

Implementation of the Proposed Action has the potential to result in the discovery of previously unidentified, subsurface cultural resources. For this reason, UDOT's Standard Specification Section 01355, Part 1.10, Discovery of Historical, Archaeological, or Paleontological Objects applies to the SR-68 Project.

3.16 HAZARDOUS WASTE

3.16.1 Regulatory Setting

The hazardous materials assessment was initiated by review and evaluation of existing federal and state electronic environmental databases to determine the presence of hazardous material sites near the project corridor. Based on the environmental database information and a visual reconnaissance, a Data Map Corridor Study was completed for the project corridor.

3.16.1.1 Affected Environment

The presence of hazardous materials has been identified at the following sites along the project corridor:

- The LDS Church Welfare Service site at 6925 North Redwood Road in Lehi includes two unregulated farm size Underground Storage Tanks (UST) and four USTs that have been removed; and
- The Maverik #266 Bluffdale site at 14416 South Redwood Road in Bluffdale includes three USTs that are open and operable.

The State of Utah Department of Environmental Quality was contacted regarding these two sites and no compliance issues have been noted (Wilson, 2007). No further investigation or monitoring has been recommended.

No Leaking Underground Storage Tanks have been identified along the project corridor.

3.16.2 Environmental Consequences

3.16.2.1 No Build Alternative

The No Build Alternative will not affect hazardous materials sites identified in the project corridor.

3.16.2.2 Proposed Action

The Proposed Action will not impact known hazardous materials sites. The USTs identified above will not require removal as part of the Proposed Action.

3.16.3 Mitigation

Also, the Contractor will be required to abide by UDOT Standard Specification 01355 – Environmental Protection for the discovery during construction of hazardous materials or any hazardous materials generated by the Contractor.

3.17 VISUAL QUALITY

3.17.1 Regulatory Setting

The Council on Environmental Quality suggests that visual and aesthetic qualities be considered in determining visual effects of a project (Title 23, USC 109(h)). This section discusses the visual quality and the impacts anticipated along the corridor for the Proposed Action.

3.17.2 Affected Environment

The general appearance of the project area is consistent with a semi-urban environment with intermittent agricultural and open space. Both Saratoga Springs and Bluffdale are rapidly growing communities; the agricultural and unused lands along the project corridor are being converted to commercial and residential uses. Within the project corridor SR-68 runs along the foothills of the Traverse Mountains. The southern terminus of the project begins approximately one mile west of Utah Lake; the high point in elevation of SR-68 is within Camp Williams at the Utah/Salt Lake County border.

The project area between the southern terminus and Camp Williams (which straddles the Utah and Salt Lake County line) primarily consists of agricultural lands with their associated houses and other structures. Several residential subdivisions have been constructed in this section along both sides of SR-68, including the Dalmore Meadows subdivision at MP 31.5 and the Harvest Hills subdivision at MP 33.5. The SR-73/SR-68 intersection has been developed with commercial establishments on three of its four corners.

From the SR-73/SR-68 intersection SR-68 is lined on both sides by intermittent commercial and residential structures until about 10000 North (MP 34.5). Between 10000 North and the southern boundary of Camp Williams there is mainly open land on both sides of the roadway. Camp Williams, which is bisected by SR-68, includes an airport west of the roadway and a number of structures east of the roadway.

Between Camp Williams and 15000 South in Bluffdale, the SR-68 corridor mainly consists of open space. Several homes (mostly on the east side of the roadway) and one subdivision, River View, are located on the east side of the corridor. The Camp Williams electrical substation is on the west side of the highway.

Between 15000 South and Bangerter Highway the SR-68 corridor is lined with residential housing.

3.17.3 Environmental Consequences

3.17.3.1 No Build

The No Build Alternative will not impact visual conditions in the project area.

3.17.3.2 Proposed Action

The Proposed Action will widen SR-68 to five lanes within the project corridor. Additional lanes will be added at major intersections to facilitate turning onto and from cross streets. A standard 10-foot shoulder will be added along both sides of the roadway consistent with

current design standards. Curbs and gutters, sidewalks, and a park strip also will be included. Because the footprint of the roadway will be expanded, areas along the project corridor will require cut and fill sections. The roadway cross-section is consistent with roadway improvements approved along SR-68 north of Bangerter Highway. The road grade and curves will be modified to meet current AASHTO design standards.

The visual quality of the project corridor will not substantially change as a result of the Proposed Action. The project will be constructed on the existing SR-68 alignment.

3.18 INDIRECT IMPACTS AND CUMULATIVE IMPACTS

The Council on Environmental Quality (CEQ) regulations require an assessment of indirect impacts and cumulative impacts. As part of this project indirect impacts and cumulative impacts were analyzed for the Proposed Action.

3.18.1 Indirect Impacts

Indirect impacts are those that are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR § 1508.8).

For the SR-68 project, land uses within the project corridor have been changing in recent years. The incorporation of Saratoga Springs City (December 1997), and Eagle Mountain (December 1996) along with rapidly growing city of Lehi have brought increased development pressure to the area. Bluffdale City and southwestern Salt Lake County are also growing at a rapid pace.

Currently, land use is a mix of agricultural, residential, commercial, and undeveloped land. Camp Williams, located in the middle of the project corridor, was created in 1926 on more than 18,000 acres of land. Even though land uses have changed throughout time, the Proposed Action will not expedite the conversion or alter the existing land uses. It is anticipated that with or without the Proposed Action, the land uses will continue to change from agricultural or undeveloped to residential and commercial uses. As shown in Figure 3-2 in this chapter, there are many planned and approved developments within the cities of and Saratoga Springs, Lehi, and Bluffdale (Eagle Mountain not shown) along the project corridor.

Based on this information, there will be no indirect impacts along the project corridor as defined by CEQ regulations.

3.18.2 Cumulative Impacts

Cumulative impacts are defined as “impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.” (40 CFR 1508.7)

Cumulative impacts are resource-focused. For the analysis along the corridor, the

resources evaluated include farmland, air quality, and noise. The potential cumulative impacts are described below.

3.18.2.1 Farmland

The cumulative impacts on farmland depend on the future changes on land use. For the farmland cumulative impact analysis the geographic area is between the Jordan River on the east, Traverse Mountains on the west and the project limits on the south and north. The Proposed Action will directly convert 20.5 acres of farmland to roadway uses. However, no farm or agricultural business will be bisected by the Proposed Action.

- Past Trends – The area has been changing from a farming community to more residential and commercial community, especially in Saratoga Springs.
- Future Trends – Farmlands areas within the cumulative impact study corridor have been changing in recent years. The incorporation of Saratoga Springs City (December 1997), and Eagle Mountain (December 1996) along with rapidly growing city of Lehi have brought increased development pressure to the area. Bluffdale City and southwestern Salt Lake County are also growing at a rapid pace. The planned and approved developments are shown in Figure 3-2. This trend is expected to continue.

3.18.2.2 Air Quality

For the air quality cumulative impact analysis the geographic area considered is Utah and Salt Lake County. As stated above, the Proposed Action will not have a direct impact on air quality. However, this issue has been a concern in both counties.

- Past Trends – Both Utah and Salt Lake County have been considered a non-attainment area for air pollution. They are now both in compliance with the states implementation plan.
- Future Trends – Air quality will most likely worsen as both counties grow at a rapid pace. The Proposed Action will improve air quality when compared to the No Build because of reduced delays and traffic congestion.

3.18.2.3 Noise

For the noise cumulative impact analysis the geographic area considered is within 500 feet of the project corridor. The Proposed Action will impact 115 sensitive noise receptors along the project corridor.

- Past Trends – Noise levels have increased along the corridor as the amount of traffic use has increased.
- Future Trends – Noise will continue to increase resulting from an increase in the number of vehicles. Other planned roadways such as the Mountain View Corridor will also increase noise for a section of the project corridor near Camp Williams.

3.19 CONSTRUCTION IMPACTS AND MITIGATION

This section discusses the short-term impacts and mitigation resulting from construction of the Proposed Action. No construction phasing is planned for the Proposed Action. The

existing roadway will be used during construction so that no temporary pavement will be required outside of the project's roadway footprint. The cross-section is wide enough to accommodate a two-step construction sequence that will minimize impacts to traffic during construction. Two-step construction includes completing one side of the proposed roadway while traffic uses the existing road and shifting traffic over to the complete side.

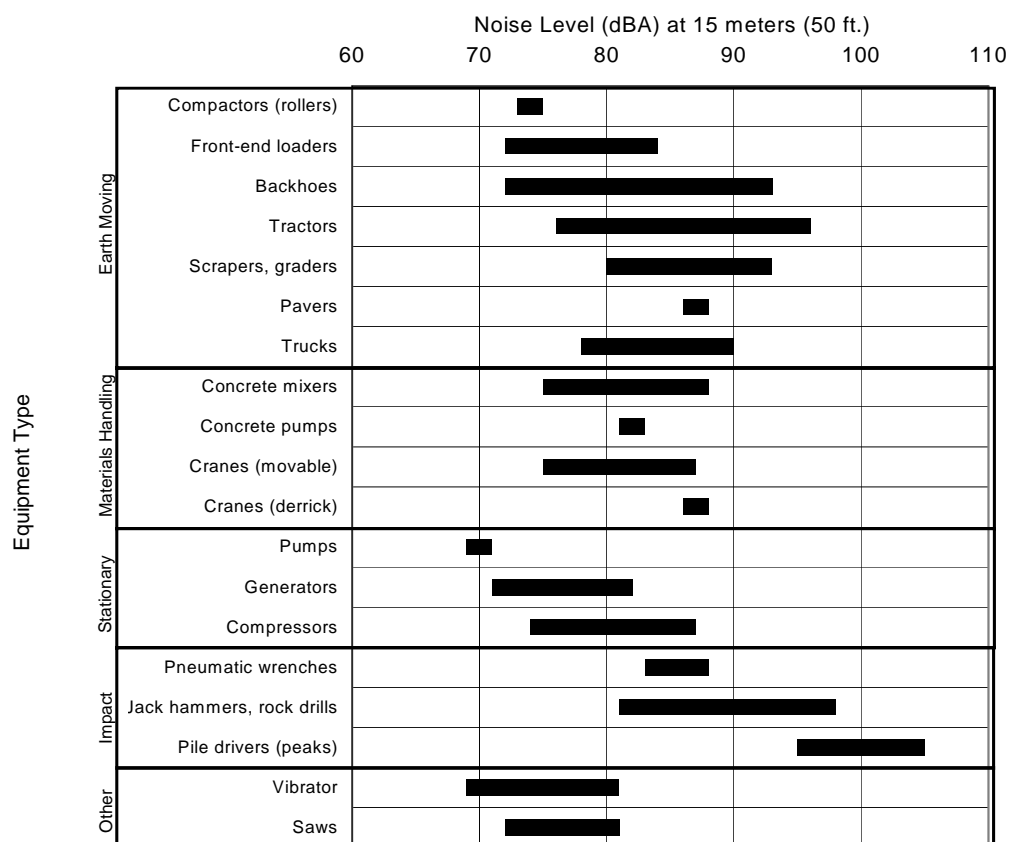
3.19.1 Traffic and Access

There is the potential to have short term and temporary impact to motorists and pedestrians from construction traffic delays, detours, and access to businesses and residences. To minimize impacts during construction the Contractor will be required to follow the specifications in the Manual on Uniform Traffic Control Devices (MUTCD), provide advance notice for road closures and delay, and maintain access to residences and businesses.

3.19.2 Noise

Noise will be generated as a result of construction activities and equipment. Temporary noise increases will affect adjacent land uses as highway widening and other improvements are constructed. These impacts will be short term and will shift as construction activities proceed from one part of the highway to another. Typical construction noise levels are identified in Exhibit 2.

EXHIBIT 2. CONSTRUCTION NOISE LEVELS



Equipment used will have sound control devices no less effective than those provided on the original equipment. No equipment will have unruffled exhaust. All equipment will comply with the pertinent equipment noise standards of the U.S. Environmental Protection Agency. In addition to these measures, the Proposed Action would follow any applicable local noise ordinances to control potential construction noise impacts. Construction noise impacts are considered temporary and will be minimized through contractors adhering to UDOT Standard Specifications for noise and vibration control. Extended disruption of normal activities is not expected because no single receptor will be exposed to construction noise of long duration.

3.19.3 Air Quality

Construction of the Proposed Action will temporarily affect air quality in the project area as a result of increased dust and particulate levels. The Contractor will be required to follow UDOT's Standard Specification 01572 - Dust Control and Watering. The Utah Division of Air Quality stated that fugitive dust should be controlled using Best Management Practices.

During construction, standard noise-reduction measures could be implemented to limit impacts on adjacent land uses. The list below identifies standard measures that could be followed during proposed construction.

3.19.4 Farmlands

Construction of the Proposed Action will temporarily restrict access to some agricultural properties. UDOT will maintain access to existing farmland and agricultural areas as part of roadway design. Potential effects on the irrigation systems, including ditches, canals, and ponds, will be avoided or reconstructed as part of the design and construction of the Proposed Action. These facilities will be relocated and reconstructed to maintain continuity and use of the water delivery systems.

3.19.5 Water Quality

During construction of the Proposed Action the effects to ground and surface water will be minimal. Effects from storm water runoff will also be minimal during construction due to implementation of appropriate BMPs and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP will be developed during the design phase of this project. It may include such measures as silt fences, fiber rolls, and other techniques to minimize storm water impacts to receiving waters. There may be a temporary increase in erosion due to the disturbance of banks and stream beds of surface waters and relocation or reconstruction of irrigation systems.

Due to the nature of the project, the potential for groundwater contamination is minimal. BMPs will be implemented to protect against spills or leakage of contaminants into soils. The Contractor will be required to follow UDOT's Standard Specification 01355 – Environmental Protection.

3.19.6 Utilities and Canals

Construction will require the relocation and/or re-construction of several utilities and irrigation systems. Advance notice will be given of all anticipated disruptions to utility

service. Water carried by the irrigation facilities will continue to reach farmers during construction. BMPs will be used to maintain the quality of the water within the irrigation facilities during construction.

3.19.7 Geology, Soils, and Topography

During construction of the Proposed Action, the geology, soils, and topography may be temporarily affected as new structures are created or existing structures are removed or improved. An erosion control plan will be implemented to address any potential high-water flows from offsite that will need to be mitigated as these enter the construction site. Best Management Practices (BMPs) may include the use of high flow silt fences, check dams, fiber rolls, and/or stilling basins. Disturbed areas will also need to be seeded and stabilized as soon as possible after construction. Regular inspection will ensure that measures implemented remain effective. Construction practices will be managed to limit the duration of exposed soil to wind and rain.

3.19.8 Hazardous Materials

Construction activities could result in accidental spill of hazardous materials, particularly petroleum products. The Contractor will be required to follow UDOT's Standard Specification 01355 - Environmental Protection.

3.19.9 Invasive Species

The potential exists for invasive plant species to be introduced and propagated in the Proposed Action roadway and adjacent right-of-way. The Contractor will be required to follow UDOT's Special Provision 02924S – Invasive Weed Control, during construction activities. The BMPs listed in this specification include washing equipment (i.e. earth movers, graders, trucks) prior to their use and applying an herbicide along the project corridor prior to construction to control the spreading of these noxious species. Also, disturbed areas will be revegetated with native, non-invasive species as soon as feasible.

3.19.10 Public Information and Coordination

A public information plan will be developed and implemented during the construction of this project. The plan will be designed to distribute construction related information to the local jurisdictions, affected businesses and residents, the traveling public, and the stakeholders.

3.19.11 Construction Work Hours

The work hours will be coordinated with the local jurisdictions prior to construction.